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THE JOURNAL OF NEUROLOGY AND PSYCHOPATHOLOGY.

Vol. IX. APRIL, 1929. No. 36.

Original Papers.

CONGENITAL AUDITORY IMPERCEPTION (CONGENITAL WORD-DEAFNESS): INVESTIGATION OF A CASE BY HEAD'S METHOD.*

BY C. WORSTER-DROUGHT AND I. M. ALLEN, LONDON.

IN a previous communication[1] we recorded a case of 'congenital auditory imperception' in which word-meaning-deafness was the outstanding important element. As some degree of auditory agnosia was also present, and, in addition, slight word-blindness, some agraphia and a pronounced speech defect, the term 'congenital word-deafness' appeared too limited in scope to apply to the condition. Similarly, 'congenital auditory agnosia' had too broad a connotation as implying total inability to differentiate between any sounds whatever. We preferred, therefore, the term 'congenital auditory imperception' as it was free from both these objections and probably indicated more completely the fundamental defect. It was pointed out that the disorganisation of speech-mechanism resulting from the auditory imperception had led to the development of a method of vocal expression of the nature of so-called 'idioglossia,' a purely 'individual' language representing an extreme form of mispronounced and ill-expressed conventional language. The clinical features of the case were described in some detail, the observations being based upon the usual routine methods of investigation.

In the present communication we record the results of the examination of the same patient by the methods employed and described by Henry Head[2] in the investigation of aphasia and associated speech defects. One variation from the original method, however, has been adopted. For each test that depends upon an oral request, two separate tests have been substituted: (1) with the command given where the patient can hear but not see the speaker, and (2) with the command given where the patient can both hear and see him. This variation was rendered necessary in order to distinguish between the patient's actual word-hearing and his ability to lip-read.

It has not been considered necessary to describe in detail the technique of the tests, as with the exception of the variation mentioned Head's methods as described by him in 1920[2] have been adhered to strictly.

* From the West End Hospital for Diseases of the Nervous System, London.

TABLE

TEST I: NAMING AND RECOGNITION

Object.	(1) Pointing to an object on the table which corresponds to one shown to him.	(2) Pointing to an object named verbally by the observer (in his sight).	(3) Pointing to an object named verbally by the observer (out of his sight).
Penny.	Correct; rapid.	Pointed to florin.	Repeated name imperfectly; no response.
Scissors.	,, ,,	Correct; rapid.	Repeated word imperfectly; pointed to florin.
Match.	,, ,,	Said "match"; correct; rapid.	Repeated word imperfectly; no response.
Card.	,, ,,	Said "card"; correct and rapid.	Repeated word imperfectly; pointed to scissors.
Florin.	,, ,,	Said name imperfectly; correct and rapid.	Pointed to penny.
Card.	,, ,,	Pointed to penny.	Repeated name imperfectly; pointed to match.
Penny.	,, ,,	Said name imperfectly; pointed to penny quickly.	Pointed to match.
Match.	,, ,,	Said name imperfectly; pointed to match.	Repeated name imperfectly; pointed to card.
Florin.	,, ,,	Pointed to florin; then to card, repeating name imperfectly.	Repeated name imperfectly; pointed to match.
Match.	,, ,,	Correct; rapid.	Repeated name imperfectly; pointed to scissors.
Penny.	Pointed to florin; at once changed to penny.	Repeated name imperfectly; pointed to penny.	Repeated name imperfectly; correct.
Scissors.	Correct; rapid.	Hesitated; finally correct.	Repeated name imperfectly; pointed to florin.
Card.	,, ,,	Repeated name imperfectly; correct.	Pointed to match.
Florin.	,, ,,	Correct; rapid.	Pointed to penny, saying "penn".

I.

OF COMMON OBJECTS.

(4) Pointing to an object named in print.	(5) Duplicate placed in left hand out of sight.	(6) Naming an object indicated.	(7) Writing the name of an object indicated.
Correct; rapid.	Correct; rapid.	Said "penna".	Said "penna"; wrote "Sag".
,, ,,	,, ,,	Said "tisses".	Said "tisses"; wrote GASF slowly; then stopped.
,, ,,	,, ,,	Said "mat".	Said "mat"; wrote MTLLA.
,, ,,	,, ,,	Said "chad".	Made an indistinguishable sound; wrote DSTH.
Pointed to penny.	,, ,,	Said "too".	Wrote DSTD without speaking.
Pointed to florin.	,, ,,	Said "chad".	Wrote MSGD.
Correct; rapid.	,, ,,	Said "penna".	Wrote STAD.
,,	,, ,,	Said "mat".	Wrote MTLLD.
,, ,,	,, ,,	Said "too".	Wrote MLSLD.
,, ,,	,, ,,	Said "mat".	Wrote MTLLA.
Hesitated; then pointed to penny.	,, ,,	Said "penna".	Wrote SLWOD.
Pointed to card; then to scissors.	,, ,,	Said "tisses".	Wrote GHTLD.
Pointed to florin.	,, ,,	Said "chad".	Wrote MTLH.
Pointed to scissors; then match.	,, ,,	Said "too".	Wrote GHLSD.

OBSERVATIONS ON TEST I: NAMING AND RECOGNITION OF COMMON OBJECTS (TABLE I).

(1) All the tests involving pointing to an object on the table corresponding to one shown to the patient were performed correctly; the only error was the choice of the florin in place of the penny on one occasion, an error which was corrected at once. The routine of the test was appreciated without any difficulty. As the test proceeded, each object shown was pointed to more and more rapidly.

(2) Pointing to an object named by the observer in his sight produced only one error—that of pointing to the florin instead of the penny. In each case the name was repeated imperfectly when the observer was seen saying it, and then the object was pointed out. The objects were pointed to much less rapidly than in the previous test; the speed did not increase with successive tests but rather lessened and in two cases towards the end there was a definite hesitation before the correct object was chosen.

(3) Pointing to an object named by the observer out of sight produced only one correct result. In each case the sound of the word was repeated imperfectly before a choice was made; in two of the earlier tests there was no response; while in the last test, when he was asked to point to the florin, the penny was chosen and at the same time the word "penn" said.

(4) Pointing to an object named in print was performed correctly and rapidly for the first few tests; then, with apparent fatigue, two errors were made; following this several correct choices were made; and finally a number of objects were chosen incorrectly. With the earlier tests, it seemed as though he waited to associate the printed name with the object and so chose correctly; whereas, with the later tests, he did not wait to do so but chose at random and usually incorrectly.

(5) In every case pointing to the duplicate of an object placed in the left hand out of sight was performed correctly.

(6) The endeavour to name an object pointed out to him resulted in the production of names which were apparently mispronounced versions of the 'conventional' names and, assuming that they were the names of the objects in his 'individual' language, were applied in each case correctly.

(7) The writing of the name of an object indicated resulted in the production of a series of letters in each case which had no relation either to the 'conventional' or 'individual' name of the object, and were, as a rule, applied indiscriminately to different objects. The only exception to this was the writing of MTLLA, MTLLD, and MTLLD on different occasions for a match. In no case, with any of the tests shown, was there any evidence of dissatisfaction with an incorrect result.

CONCLUSIONS FROM TEST I.

Part (1). No visual agnosia for common objects: visual memory for images (of common objects) intact.

Part (2). Lip-reading: fairly good for names of common objects but inclined to rapid fatigue.

Part (3). Word-meaning-deafness. No absolute word-sound-deafness but word-hearing is not perfect: distinguishes words from other sounds, but repetition of words heard (in 'conventional' language) is imperfect.

Part (4). Some degree of alexia in the sense of word-meaning-blindness—imperfect interpretation of printed names of common objects in conventional language.

Part (5). No tactile agnosia; stereognostic sense with consequent image-formation and correlation with that visual memory, normal.

Part (6). The patient has an idioglossic name for each common object.

Part (7). The patient is unable to write in conventional language the names of common objects seen (expressive agraphia for ordinary language), but makes an imperfect attempt to write the name in his individual language (partial expressive agraphia for idioglossic words.)

OBSERVATIONS ON TEST II: NAMING AND RECOGNITION OF COLOURS (TABLE II).

(1) Pointing to a colour similar to that shown was in every case performed correctly and rapidly.

(2) Pointing to a colour named by the observer in his sight produced varying results, but in only one case was the choice correct. In every case the name of the colour indicated was repeated imperfectly after the observer, after which a choice was at once made. It was doubtful at this stage if the errors in this test were due to the subject's imperfect knowledge of lip-reading, upon which he obviously depended, or to his imperfect knowledge of the names of colours. That the former is the more probable explanation was shown by the results of the test of naming colours shown.

(3) Pointing to a colour named by the observer out of his sight was, with one exception, performed in silence. The choice was made rapidly, without any hesitation, and in every case but two incorrectly. With the first test for green the colour was chosen correctly but with a subsequent test blue was chosen; while in the first test for white the choice was correct but with a subsequent test black was chosen.

(4) Pointing to colours named in print was incorrect with two exceptions, viz., black and orange, but in both these cases a different colour was chosen at the second test, viz., red and white.

(5) Naming a colour shown revealed a definite acquaintance with colours and the presence of '*individual*' *names for each of them.* Black was consistently called "trem"; red, "gee"; blue "weeve"; green, "cree"; orange, "drapoo"; and violet, "ruve." Yellow was named in one test "jumbu," and in a second test "drapoo"; the latter result suggesting that it may have been confused with orange. However, in the test immediately following, that for white, the name "drapoo" apparently persisted in the name "drap". In spite of these two errors, it was apparent that the subject was acquainted with the individual colours and had applied to each of them a name in his 'individual' language.

(6) Writing the name of a colour indicated, produced only one set of symbols applied constantly to a colour, viz., "tree" for green. With red and blue, however, there was some similarity in the symbols used—for the former "HSTG" and "HSTLD", and for the latter "with" and "WiHS".

(7) Reading aloud the name of the colour printed by the subject himself revealed the most interesting feature of the test. With the first five names, the name read coincided exactly with the name used when naming the colour shown, in spite of the apparently strange combination of symbols employed in each case. Subsequently, however, the name read varied on each occasion, with the exception of those for blue and green. Blue, written as "with" and "WiHS", was in each case read as "weeve"; while green, written as "tree", was read as "cree", the name read in each case coinciding with that used when naming blue and green as they were pointed out. The two sets of symbols written for red, viz., "HSTG" and "HSTLD" were read as "gee" and "gem", the former being the expression used in naming the colour.

TABLE

TEST II: NAMING AND

Colour.	(1) Pointing to similar colour to that shown.	(2) Pointing to colour named by observer (in his sight).	(3) Pointing to colour named by observer (out of his sight).
Black.	Correct; rapid.	Said "blu"; pointed to blue.	Pointed to blue.
Red.	,, ,,	Said "red"; pointed to black.	Pointed to black.
Blue.	,, ,,	Said "blu"; pointed to white.	Pointed to red.
Green.	,, ,,	Said "green"; pointed to red.	Correct; rapid.
Yellow.	,, ,,	Correct; rapid.	Pointed to violet.
White.	,, ,,	Said "white" imperfectly; pointed to violet.	Correct; rapid.
Orange.	,, ,,	Said "green" imperfectly; pointed to green.	Made a sound; and pointed to black.
Violet.	,, ,,	Made a sound; pointed to blue.	Pointed to blue.
Orange.	,, ,,	Said "orung"; pointed to blue.	Pointed to white.
White.	,, ,,	Hesitated; pointed to violet.	Pointed to black.
Green.	,, ,,	Correct; rapid.	Pointed to blue.
Red.	,, ,,	Said "red"; pointed to yellow.	Pointed to yellow.
Black.	,, ,,	Said "bwak"; pointed to green.	Pointed to orange.
Blue.	,, ,,	Said "blu"; pointed to yellow.	Pointed to red.
Violet	,, ,,	Said "vite"; pointed to orange.	Pointed to green.
Yellow.	,, ,,	Pointed to blue.	Pointed to violet.

II.

RECOGNITION OF COLOURS.

(4) Pointing to colour named in print.	(5) Naming colour shown.	(6) Writing name of colour indicated.	(7) Reading aloud the name of colour he had written.
Correct ; rapid.	Said " trem ".	Wrote CLSMD.	Read " trem ".
Hesitated ; then pointed to white.	Said " gee ".	Wrote HSTG.	Read " gee ".
Pointed to green ; then red.	Said " weeve ".	Wrote With.	Read " weeve ".
Pointed to violet.	Said " cree ".	Wrote tree.	Read " cree".
Pointed to green.	Said " Jembu ".	Wrote MOLSD.	Read " jumbu ".
Pointed to blue.	Said ?? " white ".	Wrote GLSTO.	Read " gee ".
Correct ; rapid.	Said " drapoo ".	Wrote DOMTD.	Read " gem ".
Pointed to white.	Said " ruve ".	Wrote Werht.	Read " drap ".
Pointed to white.	Said " drapoo ".	Wrote CSLMtD.	Read " tee ", " gem ".
Pointed to violet.	Said " drap ".	Wrote MIDOG.	Read " drapoo ".
Pointed to black.	Said " cree ".	Wrote tree.	Read " cree ".
Hesitated ; pointed to green.	Said " gee ".	Wrote HSTLD.	Read " gem ".
Hesitated ; pointed to red.	Said " trem ".	Wrote DLTGG.	Read " gee ".
Pointed to yellow.	Said " weeve ".	Wrote WiHS.	Read " weeve ".
Pointed to white.	Said " ruve ".	Wrote GHSTD.	Read " gee ".
Pointed to black.	Said " drapoo ".	Wrote DSMLD.	Read " drapoo ".

CONCLUSIONS FROM TEST II.

Part (1). Visual memory normal, for colours.

Part (2). Lip-reading: imperfect for names of colours.

Part (3). Word-meaning-deafness.

Part (4). Some alexia in the sense of word-meaning-blindness for names of colours in written conventional language.

Part (5). The patient has an idioglossic name for each colour.

Part (6). Expressive agraphia for conventional language. (Idioglossic name written imperfectly for each colour). Slight expressive agraphia for individual language.

Part (7). Uses idioglossic terms in reading his own printed names for colours (although not quite perfectly).

OBSERVATIONS ON TEST III: THE MAN, THE CAT AND THE DOG TEST (TABLE III).

(1) Reading the printed words aloud was performed readily and showed that an individual sound was employed almost constantly for each word in the test.

(2) Reading from pictures resulted in the production of sounds for each object which resembled in general those produced in the previous test, but differed from them in minor details.

TABLE

TEST III: THE MAN.

Test applied.	(1) Reading aloud. Read:	(2) Reading from pictures. Read:	(3) Writing from pictures. Wrote:
The cat and the dog.	Ge arhn ahn ge ghu.	Kaht; doee.	Cat; bog.
The dog and the man.	Ge ghu ahn ge darm.	Doee; mahn.	bog; da-Daddy.
The cat and the man.	Ge art ahn ge darm.	Kaht; mahn.	Cat; Daddy.
The man and the dog.	Ge darm ahn ge ghu.	Mahn; doee.	Daddy; bog. (Formed "g" wrong; took paper back and changed it.)
The dog and the cat.	Ge ghu ahn ge arhn.	Doee; kaht.	bog; Cat.
The man and the cat.	Ge darm ahn ge arhn.	Mahn; kaht.	Daddy; Cat.

Again, an individual name was applied constantly to each object. No persuasion short of an actual demonstration elicited a whole phrase in relation to the picture demonstrated, and only the actual names of the objects represented were spoken. The names in the 'individual' language for the words read and for the objects represented were apparently mispronounced versions of the conventional words.

(3) Writing from pictures again failed to produce a complete phrase; again only the names of the objects were produced. The "d" of "dog" was always written as "b", an error in writing fairly common among young children who are learning to write. In the first picture in which a man was represented, "da" was written first, then there was a pause and the name was begun again with "D" and completed. A man was in each case represented by "Daddy" and not by "man". In one test, when writing "bog", the "g" was formed incorrectly, it was inspected, the paper taken back and the mistake corrected.

(4) When he was writing from dictation with the speaker visible, the words were repeated on each occasion before any attempt was made to write. An attempt to dictate the whole sentence before the subject began to write resulted in complete failure. The first dictation was performed correctly with the exception of "a" for "and"; but in the second piece he stopped before the final word and did not proceed. Following that, the results became more and more confused and even the word "the" was written incorrectly.

(5) Writing from dictation with the speaker out of sight resulted in every case but one in the writing of five words, in varying combinations of "cat" and "bog" and other words. It

III.

THE CAT AND THE DOG TEST.

(4) Writing from dictation, where he can see speaker. Wrote:	(5) Writing from dictation, where he cannot see speaker. Wrote:	(6) Repetition (speaker out of sight). Said:	(7) Reading what he has written. Read:	(8) Copying. Wrote:
the cat a the bog (repeats aloud).	The bog a the cat.	Ge kaht ahn ge doee.	Ge doee ahn ge kaht.	Correct; rapid.
the bog a the . . . (stopped, repeated)	the bog me cat a.	Ge doee me doee ahn.	Ge doee me kaht ahns.	" "
the bog a the bog (repeated words).	bog The me cat ahns.	Ge doee doee me aich.	Dog da me kaht ahns.	" "
the the me a bog (repeated words).	Dog the a cat em.	Ge ahn em ge doee.	Doee ghu a kaht me.	" "
the bog as bog cat (repeated words).	the bog me a cat em.	Ge dog ge ahn aich.	Ge doee me a kaht me.	" "
bog me as em (repeated words).	the bog em cat me.	Ge doee doee ge taht.	Ge doee me kaht me.	" "

was noticeable that the final word of the first dictation, "dog", persisted throughout each phrase. In every case in which writing was involved in the test, the words were written in column and not side by side as in the usual method of writing a phrase.

(6) In repeating the phrases from dictation (out of sight) the first word was repeated correctly in the individual language in each case; in the first repetition, the whole phrase was repeated correctly, but subsequently no more than two words were ever repeated correctly. It seemed as if the early words of the phrase were remembered for a short period, while beyond that only the fact that there were five words in the phrase was appreciated.

(7) Reading aloud what was written resulted in an exact interpretation, in the individual language, of the symbols on the paper.

(8) The copying of words was in every case performed correctly, even to the relative positions of the separate words to one another.

CONCLUSIONS FROM TEST III.

Part (1). Idioglossic term consistently used for same word.

Part (2). Idioglossic term used (spoken) almost constantly for the same word.

TABLE

TEST IV: THE

Time directed.	(1) Direct Imitation.	(2) Clock set to oral commands he can see.		(3) Clock set to oral cannot
		Ordinary.	Railway.	Ordinary.
5 minutes to 3 (2.55).	Correct.	2.15 (M.H. at 3).	5.10 (N.B.: 55).	5.15 (M.H. at 3; H.H. at 5).
20 minutes past 2 (2.20).	,,	2.00	4.15 (M.H. at 1; H.H. at 4).	2.05
Quarter to 6 (5.45).	,,	6.00	3.25 (M.H. at 5).	1.30 (M.H. at 6).
24 minutes past 4 (4.24).	,,	4.10	3.10	2.55
5 minutes to 3 (2.55).	,,	3.10	2.25 (M.H. at 5).	2.25 (M.H. at 5; H.H. at 3).
Quarter past 3.	,,	1.15 (M.H. at 3).	3.20	5.05
10 minutes to 7 (6.50).	,,	2.35 (M.H. at 7).	4.30 (said 'fifikee'; M.H. at 6).	3.20
10 minutes past 6 (6.10).	,,	6.05	6.25	1.35
25 minutes to 5 (4.35).	Reversed M.H. and H.H.	3.05	5.20 (M.H. at 4; H.H. at 5).	5.10
5 minutes past 2 (2.05).	Correct.	3.12	5.10 (M.H. at 2; H.H. at 5).	4.10 (M.H. at 2;

Part (3). Partial expressive agraphia for conventional language from pictorial representation.

Part (4). Lip-reading imperfect.

Part (5). Word-meaning-deafness.

Part (6). Word-sound-deafness not absolute. Recognises words as words but repetition is imperfect.

Part (7). No word-sight-blindness for own idioglossic written symbols; reads his own writing as idioglossic spoken words.

Part (8). No word-sight-blindness for conventional language: no total agraphia (i.e., copies written language perfectly).

OBSERVATIONS ON TEST IV: THE CLOCK TEST (TABLE IV).

The whole of this test was carried out with evident enjoyment in accordance with the patient's known fondness for anything mechanical.

IV.
CLOCK TEST.

command, wher see.	(4) Clock set to printed command.		(5) Telling the time on a clock set by the observer.	(6) Writing the time shown on a clock set by the observer.
Railway.	Ordinary.	Railway.		
6.10 (M.H. at 2).	3.25 (H.H. at 3; M.H. at 5).	2.10	lifoo tree (i.e., 11; 3).	11 3
1.00	5.10 (M.H. at 2).	1.05	fuore oo tu (i.e., 4; 2).	4 3
1.55	4.30 (M.H. at 6).	4.25 (M.H. at 5).	tik nihn (i.e., 6; 9).	9 6
2.25	4.20 (both hands at 4).	5.15	fuore (i.e., 4).	4
3.05	5.15 (H.H. at 5; M.H. at 3).	2.10	lifoo tree (i.e., 11; 3).	11 3
2.15	5.25	Correct.	tfree (i.e., 3).	3
2.30 (M.H. at 6).	Correct.	5.30 (M.H. at 6; H.H. at 5).	kivi kenn (i.e., 10; 7).	10 7
1.30 (M.H. at 6).	5.30 (M.H. at 6).	9.50 (both hands at 10).	tik ku (i.e., 6; 2).	6 2
1.10	4.25 (M.H. at 5).	3.20 (H.H. at 3; M.H. at 4).	five keven (i.e., 5; 7).	7 5
2.25 (M.H. at 2; M.H. at 5).	5.10 (M.H. at 2; H.H. at 5).	5.10 (M.H. at 2; H.H. at 5).	tu wahn (i.e., 2; 1).	2 1

(1) The direct imitation of the time on a second clock was performed correctly in every case but one, in which the positions of the two hands were reversed.

(2) Setting the clock at oral command with ordinary time when the speaker was visible was done incorrectly in every case. There was, however, in every case but one some relation between the time directed and that set by the subject. "Five minutes to 3" was set at 2.15, the minute hand being placed at 3; "20 minutes past 2" was set as 2.00; and so on. As a rule the last number dictated was seized upon and the hands moved until one pointed to the number, the other hand being left to take care of itself. The significance of the last word in the time dictated in relation to the numbers on the face of the clock was evidently appreciated, but the relations of the two hands to each other and their significance in terms of hours and minutes were apparently not appreciated. In setting the clock at command to railway time, the same effect was noticeable in every case but one; in most cases it was the last number dictated which was set; occasionally, it was the first; and in one case two numbers were set e.g., 1.20 set as 4.05, the minute hand being at 1 and the hour hand at 4. As before, the hour and minute hands were used indiscriminately, the first one to reach the number being accepted as correct by the subject. The case mentioned above in which two hands were set correctly produced an evident expression of satisfaction.

(3) Setting the clock at oral command (for both ordinary and railway time), with the speaker out of sight, revealed the same method though in fewer instances than in the previous test.

(4) Setting the clock to printed commands (ordinary time) showed some relation between the time printed and that set in every case but one. In two cases the correct time was set; in others, the hour or minute hand indiscriminately was set to one of the numbers (e.g., 5.10 for "20 minutes past 2," in which the minute hand was placed at 2); while in three cases both hands were set to numbers printed (e.g., "5 minutes to 3" as 3.25, the hour hand at 3 and the minute hand at 5; "5 minutes to 3" as 5.15, the hour hand at 5 and the minute hand at 3). Setting the clock by printed commands (railway time) produced one correct result; in four cases both hands were set to numbers showing some relation with the time printed (e.g., 6.50 set as 5.30, the minute hand at 6 and the hour hand at 5); and in the remaining cases only one number was set to a number related to the time printed (e.g., 5.45 set as 4.25, the minute hand at 5).

(5) Telling the time on a clock set by the observer resulted in the reading of the numbers to which the hands pointed, e.g., for "a quarter to six" "tik nihn" was read. When both hands pointed almost to the same number, as in "24 minutes past 4" and "a quarter past 3", only the number 4 or 3 was read as "fuore" or "tfree".

(6) Writing the time on a clock set by the observer in the copying of the numbers to which the hands pointed. This test, in relation to actual times, was rendered difficult to interpret because the subject had probably never been educated properly in the use of the clock.

CONCLUSIONS FROM TEST IV.

Part (1). No apraxia in relation to correct imitation (and therefore interpretation) of positions (hands of clock).

Part (2). Imperfect lip-reading of oral commands to set clock at a particular time: relations of the two hands to each other and their significance in terms of minutes and hours not appreciated.

Part (3). Word-meaning-deafness, but some insight for sounds of numbers.

Part (4). Partial alexia for written commands in conventional language, but some insight for written numbers.

Part (5). Time by clock interpreted only imperfectly in idioglossic language. No word-sight-blindness for numbers.

Part (6). No word-sight-blindness for numbers. Imperfect education in use of clock.

OBSERVATIONS ON TEST V: THE COIN AND BOWL TEST (TABLE V).

This test was carried out in two sections: (*a*) using numerals in the commands both oral and printed, e.g., "2 into 3" for "second penny into third bowl"; and (*b*) using the full words in the commands, e.g., "second penny into third bowl." These two sections are tabulated and considered separately.

(*a*) *Numerals used in commands.* (1) Performing the actions on oral command when the speaker could be seen produced a correct result in over half the cases. In two others the numerals were reversed, e.g., in the command "1 into 3", the third penny was placed in the first bowl. In two other cases, the penny was chosen correctly but was placed in the wrong bowl. In one case the wrong penny was chosen but placed in the right bowl. Throughout the whole of this part of the test, the subject watched the lips and expression of the speaker intently.

(2) When oral commands were issued with the speaker out of sight, there were only two correct responses; in four cases the penny was chosen correctly, but the bowl incorrectly; and in only one case was the bowl chosen correctly when the choice of the penny was incorrect. That is to say, in many cases the first number spoken was applied correctly, but as a rule the second number was applied incorrectly.

(3) Performing the actions in response to printed commands not read aloud was correct in practically every case; in one case the numbers of the penny and of the bowl were reversed; and in one the penny only was chosen incorrectly.

(4) In every case the printed commands were read correctly in the individual language; that is, the conventional words for the numbers were mispronounced so as to be in some cases almost unrecognisable. The actions corresponding to the printed commands were carried out correctly in every case but one, in which the numbers of the penny and of the bowl were reversed. In two cases the penny was chosen correctly and placed in the wrong bowl, but at once withdrawn and placed in the right one. In one case the mistake in the action immediately preceding was carried over into the next action but at once corrected. This test, being of a comparatively simple character and requiring little thought, showed how in simple propositions the subject was mainly deficient in his appreciation of sounds, was not as proficient as he might have been in the appreciation of the movements of the lips of the observer and their association with ideas, and was relatively proficient in his appreciation of printed commands both when read silently and when read aloud.

(*b*) *Issuing the commands in a complete phrase without the use of numerals* placed a greater stress upon all the factors in the speech mechanism and upon the power of propositionizing, and resulted in confusion in every part of the test.

(1) Performing the action on oral command when the speaker could be seen was correct in only two cases; but, excepting that in three cases the penny alone was chosen correctly and in one the numbers were reversed, there was no relation between the numbers in the command and those of the penny and bowl chosen.

(2) The first five oral commands when the speaker could not be seen resulted in complete confusion; but following these a kind of stereotypy seemed to develop, for in every case the fourth penny was chosen and placed in a bowl incorrectly.

(3) This stereotypy appeared in a more perfect form in the actions performed in response to printed commands not read aloud. The first five commands again resulted in complete confusion, but in response to the following seven commands the first penny was chosen and placed in the second bowl in every case.

(4) The difficulty of transcribing satisfactorily the words spoken by the subject in reading the printed commands caused this part of the test to be abandoned. Two of the commands were executed correctly; in two cases the numbers were reversed; and in one case the penny alone was chosen correctly. It was apparent that the additional help afforded by the action of the muscles of articulation in forming the words improved the subject's performance, though not very much.

TABLE

TEST V.: THE COIN AND BOWL TEST, IN WHICH

(*a*) Numerals used in commands.

Command.	(1) Oral commands where he can see.	(2) Oral commands where he cannot see.
Second into third.	Second into fourth.	First into second.
First into third.	Third into first.	First into fourth.
Second into first.	Correct.	Second into third.
Third into second.	Correct.	Second into fourth.
First into fourth.	Correct.	Correct.
Fourth into third.	Fourth into second.	Fourth into second.
Second into fourth.	Correct.	First into third. (Long hesitation).
Fourth into first.	Touched fourth, then first into fourth.	Third into first.
Third into first.	Correct.	First into second.
First into second.	Correct.	First into fourth.
Third into fourth.	Second into fourth.	Correct.
Fourth into second.	Correct.	Second into fourth.
(*b*) Full words used in commands.		
Second into third.	First into fourth.	Third into first.
First into third.	Third into first.	First into fourth.
Second into first.	First into third.	Fourth into second.
Third into second.	Third into first.	Third into first.
First into fourth.	Correct.	Second into first.
Fourth into third.	Third into first.	Fourth into first.
Second into fourth.	Fourth into first.	Fourth into second.
Fourth into first.	Correct.	Fourth into third.
Third into first.	First into third.	Fourth into third.
First into second.	Third into first.	Fourth into first.
Third into fourth.	Third into first.	Fourth into third.
Fourth into second.	Fourth into first.	Fourth into first.

CONCLUSIONS FROM TEST V.

(*a*) **Part (1).** Lip-reading for simple numbers moderate but imperfect.

Part (2). Word-meaning-deafness (for numbers).

Part (3). No absolute alexia (word-meaning-blindness) for numbers; fairly good interpretation.

Part (4). Reads (aloud) printed numerals in idioglossic language with good interpretation into action.

V.

NUMBERED COINS ARE PLACED IN NUMBERED BOWLS.

(3) Printed command not read aloud.	(4) Printed commands read aloud.	
	Said :	Action :
First into third.	tu tfree	Correct.
Correct.	wun tfree	Correct.
Correct.	ku wun	Correct.
Second into third.	tfree ku	Third into first ; then corrected.
Correct.	wun fuore	Correct.
Fourth into first, then correct.	fuore tu	Correct.
Correct.	tu fuore	Correct.
Correct.	fuore wun	Correct.
Correct.	tfree wun	First into third.
Correct.	wun tu	First into third ; then corrected.
Correct.	tfree fuore	Correct.
Correct.	fuore tu	Correct.
First into third.	Haish tufee wuku tharf jun	First into second.
Fourth into first.	Faish aush muku tharf tu	Third into first.
Second into fourth.	——	Fourth into first ; then into second.
First into second.	(The difficulty of transcribing long sentences prevented further record of the manner in which the subject read the printed commands).	Third into first.
Fourth into first.		Second into third ; then into fourth.
First into second.		Third into first.
First into second.		Correct.
First into second.		Correct.
First into second.	——	Fourth into first ; then into second.
First into second.	——	Second into first.
First into second.	——	Fourth into second.
First into second.	——	Touched second ; then third into fourth.

(*b*) Part (1). Lip-reading for words very imperfect.

Part (2). Word-meaning-deafness.

Part (3). Partial alexia (word-meaning-blindness) for conventional words.

Part (4). Attempts to read (aloud) words in idioglossic language, but is very imperfect.

TABLE

TEST VI: THE HAND,

Movement.	(1) Imitation of movement made by the observer.	(2) Imitation of movements of observer seen in the glass.	(3) Carrying out pictorial commands.	(4) Pictorial commands seen in the glass.
L. hand to L. eye.	R. hand to R. eye.	Correct.	R. hand to R. eye.	Correct.
R. hand to R. ear.	L. hand to L. ear.	Correct.	L. hand to L. ear.	Correct.
R. hand to L. eye.	L. hand to R. eye.	Correct.	L. hand to R. eye.	Correct.
L. hand to R. eye.	R. hand to L. eye.	Correct.	R. hand to L. eye.	Correct.
L. hand to L. ear.	R. hand to R. ear.	Correct.	R. hand to R. ear.	Correct.
R. hand to R. eye.	L. hand to L. eye.	Correct.	L. hand to L. eye.	Correct.
L. hand to R. ear.	R. hand to L. ear.	R. hand to R. ear; changed; correct.	R. hand to L. ear.	Correct.
R. hand to L. ear.	L. hand to R. ear.	Correct.	L. hand to R. ear.	Correct.
L. hand to L. eye.	R. hand to R. eye.	Correct.	R. hand to R. eye.	Correct.
R. hand to R. ear.	L. hand to L. ear.	Correct.	L. hand to L. ear.	Correct.
R. hand to L. eye.	L. hand to R. eye.	Correct.	L. hand to R. eye.	Correct.
L. hand to R. eye.	R. hand to L. eye.	Correct.	R. hand to L. eye.	Correct.
L. hand to L. ear.	R. hand to R. ear.	Correct.	R. hand to R. ear.	Correct.
R. hand to R. eye.	L. hand to L. eye.	Correct.	L. hand to L. eye.	Correct.
L. hand to R. ear.	R. hand to L. ear.	R. hand to R. ear; changed; correct.	R. hand to L. ear.	Correct.
R. hand to L. ear.	L. hand to R. ear.	Correct.	L. hand to R. ear.	Correct.

OBSERVATIONS ON TEST VI: THE HAND, EYE AND EAR TEST (TABLE VI).

(1) Imitation of movements made by the observer resulted in the choice of the opposite hand, eye and ear in every case. In no case, however, was there failure to recognise that in such a movement as touching the right ear with the left hand the hand crossed the face to do so.

VI.

EYE AND EAR TEST.

(5) Oral commands where he can see.	(6) Oral commands where he cannot see.	(7) Printed commands not read aloud.	(8) Reading aloud and executing commands.	(9) Writing down movements made by the observer.
R. hand to R. eye.	R. hand to R. eye.	R. hand to R. eye.	R. hand to R. eye.	EDE HTND DLLTD ETD.
Correct.	L. hand to L. eye.	L. hand to L. eye.	L. hand to L. eye.	PigTHE HTND. LFEH EAD.
R. hand to R. eye.	R. hand to R. ear.	R. hand to R. ear.	R. hand to R. ear; changed; correct	PigIFT HTND DILLH EAD
R. hand to L. eye.	L. hand to L. ear.	R. hand to L. eye.	L. hand to L. ear.	PigIED HLMD PigLH EYD.
R. hand to L. ear.	R. hand to L. eye.	L. hand to R. eye.	R. hand to L. eye.	LEFT HTNLD HTFED ETD.
L. hand to R. ear.	L. hand to R. eye.	R. hand to L. ear.	L. hand to R. eye.	EAD HTND PigLD EYD.
L. hand to R. eye.	R. hand to L. ear.	Correct.	Correct.	PigTH HLED PigLD EAD.
R. hand to L. eye.	L. hand to R. ear.	R. hand to R. eye.	L. hand to R. ear.	EYD HTMD PigTH EYD.
L. hand to L. ear.	R. hand to R. eye.	Correct.	R. hand to R. eye.	ETD HTND IgITH EYD.
Correct.	L. hand to L. eye.	Correct.	L. hand to L. eye.	HSNLD DLLNH IgISD EYD.
R. hand to R. eye.	R. hand to R. ear.	L. hand to L. ear.	R. hand to R. ear.	EYD HTND IgITH ETD.
L. hand to L. eye.	L. hand to L. ear.	R. hand to L. eye.	L. hand to L. ear.	HgILD ETD HSTMD EYD.
R. hand to L. ear.	R. hand to L. eye.	L. hand to R. eye.	R. hand to L. eye.	HSND IgISD DLLND ETD.
L. hand to R. ear.	L. hand to R. eye.	R. hand to L. ear.	L. hand to R. eye.	EYD HTND IgISH ETD.
R. hand to R. eye. (started c L. hand).	R. hand to L. ear.	Correct.	R. hand to L. ear (started c L. hand)	IgISD HSLD HTND ETD.
L. hand to L. eye.	L. hand to R. ear.	R. hand to R. eye.	L. hand to R. eye.	EYD HTND IgISH ETD.

(2) Imitation of the movements of the observer seen in the mirror was correct in every case. On the two occasions when the observer placed the left hand on the right ear, the subject quickly placed his right hand on the right ear, at once removed it and then imitated the movement correctly.

(3) Carrying out movements to pictorial commands again resulted in the substitution of the opposite hand, eye and ear in every case, but again there was no failure to recognise that certain movements involved crossing the face.

(4) Carrying out movements to pictorial commands seen in the mirror was correct in every case.

(5) Carrying out movements to oral commands when the speaker could be seen was correct in two cases; in three cases the opposite hand, eye and ear were substituted; in five cases in addition to the above the hand was chosen correctly but the movement carried out incorrectly.

(6) In no cases were movements carried out correctly to oral command when the speaker was out of sight. The opposite hand, eye and ear were substituted in five cases; the opposite hand alone in twelve cases; the hand alone was chosen correctly in four cases; and in eight cases the eye was substituted for the ear or vice versâ.

(7) Carrying out movements to printed commands not read aloud was correct in only three cases; in three the opposite hand, eye and ear were substituted; in seven the hand was chosen correctly but the rest of the movement was wrong; in some cases the crossing of the face was not performed and in others it was done when it was not ordered.

(8) Reading printed commands aloud and performing the movements was correct in only one case; and in five the movements were reversed.

(9) Writing down the movements performed by the observer in no case produced a description of the movements. As far as could be judged, "HTDN" and its variations represented "hand"; "PigTH" and its variations "right"; "LFEH" and similar symbols "left"; "EYD" "eye"; and "EAD" "ear." In some cases the phrasing was more or less correct, though the description of the movements was incorrect; in others, the groups of symbols were arranged indiscriminately, as in "EYD HTMD PigTH EYD".

CONCLUSIONS FROM TEST VI.

Part (1). Imitation of actual positions correct, but right is not distinguished from left when the patient faces the observer, i.e., absence of *inner spracht* necessary to differentiate right from left.

Part (2). Imitation of movements seen in mirror all correct.

Part (3). Imitation of pictorially represented movements correct but transposed, as in (1).

Part (4). Imitation of pictorially represented movements seen in mirror all correctly performed.

Part (5). Lip-reading imperfect.

Part (6). Word-meaning-deafness.

Part (7). Some degree of alexia (word-meaning-blindness) for conventional language.

Part (8). Ditto.

Part (9). Partial agraphia for individual language; attempts to write description of movements in idioglossic language (imperfectly).

Observations on Test VII: The Alphabet (Table VII).

(1) An attempt to get the subject to repeat the alphabet spontaneously resulted in the repetition of the individual language equivalent for "A" three times, followed by a number of unrecognisable sounds which are represented more or less phonetically in the Table. The number of letters and the signal to proceed to the next letter were indicated by the observer beating with the hand.

TABLE VII.

TEST VII: THE ALPHABET.

	(1) Repeating letters.	(2) Repeating letters after observer (seen).	(3) Repeating after observer (not seen).	(4) Writing from dictation (seen).	(5) Writing from dictation (not seen).	(6) Reading letters.	(7) Arranging letters in order.
A	aiee	aiee	aiee	A	a	aiee	A
B	aiee	bee	bee	B	B	bee	B
C	aiee	kee	fee	C	(nil)	hos	C
D	ooa	kee	au	D	(nil)	aiee	D
E	neea	ee	ee	M	B	bee	F
F	wif	uff	(nil)	F	C	eff	E
G	dublu	gee	ee	E	K	tea	S
H	uu	aich	aich	S	S	gee	O
I	waiee	auu	(nil)	a	a	aiee	V
J	filluu	jaee	uu	H	F	fum	J
K	aglewuu	kaee	keea	K	E	to	M
L	goop	hiee	heeu	a	H	orl	Y
M	fin	eeum	uugee	m	D	yem	U
N	nogu	aee	hee	K	Z	ko	W
O	gergoo	oo	aich	O	O	oo	H
P	umbuu	pee	gee	B	S	pee	G
Q	noee	ku	ku	O	a	ker	P
R	figleeu	au	(nil)	a	A	puf	Q
S	teeku	ess	(nil)	S	S	ess & ets	X
T	feeku	kes	juu	B	H	tum	R
U	dublwaru	thu	uu	o	B	uu	T
V	odubeluu	duuvee	gee	Z	a	vets	K
W	ooamaku	dubeluu	auu	oo	A	wee & weet	Z
X	wuguku	ek	(nil)	Y	(nil)	dumu	N
Y	iu	wee	aiee	M	B	whale	I
Z	votu	dedge	hars	K	(nil)	wez	L

(2) Repeating the letters of the alphabet after the observer (when he could be seen) resulted in an individual equivalent for the letter in twenty cases; but in two cases the sound employed for one letter was carried on to the next, e.g., "kee" for "D" after "kee" for "C", and "kes" for "T" after "ess" for "S". In four cases the sound used bore no resemblance to that used by the observer. There was apparently inability to pronounce "C", "L", "N" and "R". In thirteen cases the sounds employed for the letters resembled closely those employed in reading the same letters.

(3) Repeating the letters of the alphabet after the observer (out of sight) resulted in a number of the letters—"A", "E", "K" and "Q"—being pronounced, but after each of these there was a repetition of the same sound or complete confusion until the next of the above-mentioned letters was encountered.

(4) Writing from dictation when the observer could be seen was done correctly for the first four letters; "E" was written as "M"; "F" was written correctly; thereafter only the more easily recognisable letters—"K", "O" and "S"—were written correctly, while for the others letters were written incorrectly in small or large type at will.

(5) Writing from dictation when the observer was out of sight was correct for only the first four letters and for "O" and "S"; in four cases there was no response, and with the remainder there appeared to be complete confusion. The only other case in which there appeared to be any resemblance between the letter dictated and that written was "A" for "R". In three cases the errors were the same as in the previous test—viz., "S" for "H", "a" for "I", and "a" and "A" for "R".

(6) Reading the letters in order resulted in individual names for them resembling closely those repeated after the observer in thirteen cases.

(7) Arranging the letters of the alphabet in order was successful for the first four letters; after that the arrangement was haphazard though the association of "P" and "Q" was remembered correctly.

CONCLUSIONS FROM TEST VII.

Part (1). Has an idioglossic term for almost every letter of alphabet. Spontaneous repetition of alphabet is in idioglossic language (imperfectly).

Part (2). Word-sound-deafness not absolute but partial; repetition of alphabet after observer results in a mixture of conventional and idioglossic terms for the letters.

Part (3). Word-meaning-deafness.

Part (4). Lip-reading imperfect even for letters.

Part (5). Word-meaning-deafness.

Part (6). No word-sight-blindness (for letters), but applies idioglossic terms imperfectly in reading alphabet aloud.

Part (7). Correct order of letters of alphabet not perfectly known.

TEST VIII: ARITHMETICAL TESTS.

(1) *ADDITION.*

(a) *No carrying over required.*

235
462
—
233 (wrong).

It is doubtful if the subject thoroughly understood what was required of him in this test. Apparently, believing that he was asked to subtract, he subtracted the smaller unit from the larger in each case, even though in the tens and hundreds columns the smaller number was in the number placed above.

157
632
—
525 (wrong).

It was obvious in this case that the subject believed that he was to subtract. He did so correctly in the units and tens columns, and in the hundreds column subtracted the "6" from a "1" which he read as "11".

345
632
—
977 (correct).

At this stage, the subject apparently understood for the first time that he was required to add the two numbers. As he added, he repeated the three numbers—"teven", "teven", "nihn"—before he wrote them.

734
235
—
969 (correct).

In this case, the addition was completed and the figures written in silence.

(b) *One carrying over required.*

372
445
—
717 (wrong).

The "1" was not carried over from the tens to the hundreds column, or written.

769
126
—
895 (correct).

The "1" was carried over from the units column without writing or saying it aloud.

457
239
—
696 (correct).

Addition completed in silence and without writing the "1" to be carried over.

(c) *Carrying over required twice.*

389
476
—
865 (correct).

In silence and without writing the figures to be carried.

275
348
—
619 (wrong).

The addition in the units column was wrong; the remaining two columns were added correctly, and the "1" correctly carried over.

587
399
—
986 (correct).

In silence and without writing the numbers to be carried.

(In every case, the subject worked correctly from right to left.)

(2) *SUBTRACTION.*

(a) *No borrowing required.*

764	895	754
253	562	223
—	—	—
414 (wrong).	333 (correct).	531 (correct).

(b) *One borrowing required:*

728
586
—
562 (wrong).

In two columns the smaller number was subtracted from the larger, in one the lower from the upper, and in the other the upper from the lower.

639
175
—
544 (wrong).

The same procedure was followed here as in the previous subtraction, the smaller number being subtracted from the larger, in one case the upper from the lower and in two the lower from the upper.

518
243
—
335 (wrong).

The same procedure was followed as in the previous two cases.

(c) *Borrowing required twice.*

621
476
—
555 (wrong).

The same procedure was followed as above. The third "5" can probably be explained as a persistence of the number which had already appeared twice, in face of the difficulty of changing the direction of the subtraction from above down to below up.

734
295
—
564 (wrong).

The same procedure was followed, though the units column was unaccountably incorrect.

CONCLUSIONS FROM TEST VIII.

Part (1). No word-sight-blindness for figures. The patient is able to do simple addition sums, even involving carrying-over.

Part (2). He is unable to do simple subtraction sums.

TEST IX: TESTING THE POWER OF DRAWING.

(*a*) When asked to draw a glass funnel from the model, the subject produced the figure attached. It is a reasonable reproduction of the model (Fig. 1).

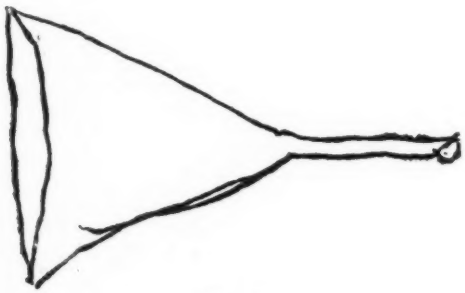

FIG. 1

(*b*) When asked to draw a glass bottle with a stopper from the model he produced the attached sketch. He succeeded in portraying all the outstanding features of the model including the neck and the details of the top of the stopper (Fig. 2).

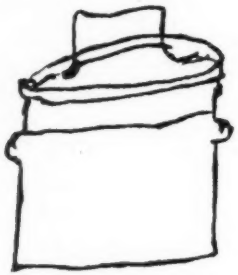

FIG. 2

(*c*) When asked to draw an elephant, he produced the attached sketch which bears a recognisable resemblance to the animal. He completed the sketch, looked it over, found that he had left out the tail and hurriedly put it in (Fig. 3).

CONCLUSIONS FROM TEST IX.

No visual agnosia. Visual memory for images and ability to reproduce them, normal.

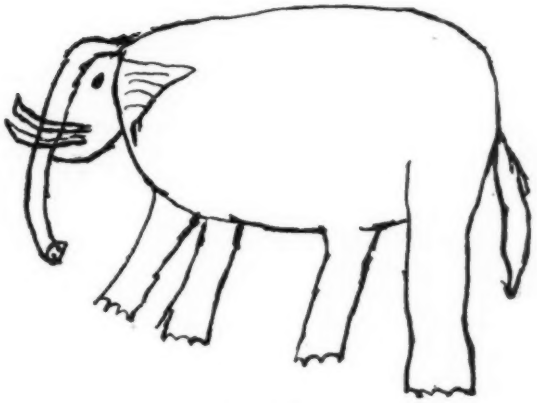

FIG. 3

COMMENTARY ON THE RESULTS OF EXAMINATION BY HEAD'S METHOD.

The pathological condition of the patient investigated can be considered under two separate headings: (1) On the *receptive* side, a congenital inability to appreciate the significance of words with consequent disturbance of the power to form images: and (2) on the *executive* side, the disturbance of speech. Although Head concluded from his research upon aphasia that the defects of language could not be explained as due to destruction of images, he added a corollary to the effect that 'word-blindness,' 'mind-blindness' and what Hughling Jackson called 'imperception' were all associated with a disturbance of the power to form images, complicated in some cases by certain affections of language. The separation of the pathological condition in the case investigated is based upon this corollary. A further point to discuss in connection with the case is the desirability of considering the findings from the point of view of what the patient has acquired in the form of language and speech, in spite of his primary disability, rather than from the standpoint of the speech defects revealed in the different tests. Most of the investigations on aphasia, including those of Head, have been carried out on individuals who were in full possession of the faculty of speech before the onset of the lesion which gave rise to the aphasia, one exception being a case studied by him—that of a woman of sixty who had suffered from a primary congenital defect of the nature of word-blindness. Instead of a background of normal speech and language, those cases in which the primary defect is congenital word-deafness or congenital word-blindness have a background which is a complete blank. In adult cases in which the aphasia has resulted from vascular, traumatic or other focal lesions, the clinical picture presented and the results of the various tests employed depend upon the extent to which the

mechanism of speech, both 'external' and 'internal,' has been impaired by the lesion, whereas in congenital cases they depend upon the extent to which the speech mechanism has developed in spite of the congenital defect.

(1) *The receptive side—auditory imperception.* That there is a primary and fundamental defect of the nature of congenital word-deafness in the case studied has been deduced from the results of the examination by routine methods, which were described in a previous communication[1]. The main defect in auditory perception is one of 'word-meaning-deafness,' while the patient is 'word-sound-deaf' only to a slight degree. This contention is further supported by a detailed consideration of the result of the examination by Head's method. In order to reveal the defect more clearly, the tests used in the latter investigation have been varied slightly from those employed by Head, in that every test which depends upon oral commands has been divided into two parts, viz.—one with the observer placed where the patient could not see him, and the other with the observer so placed that the movements of his lips and the changes in his facial expression could be seen by the patient. It was considered that this variation was necessary if the exact nature of the primary defect was to be revealed in the results of the tests by this method, and if confusion was not to result in the interpretation of the findings.

In Test I—naming and recognition of common objects—pointing to an object named verbally by the observer out of sight produced an incorrect response in every case but one. In ten of the tests out of fourteen, the patient repeated the name imperfectly after the observer and even then failed to point out correctly the object named. When, however, the object was named with the observer in sight the response was correct in twelve cases out of the fourteen, a finding which supports the conclusion based upon the previous examination that there is complete 'word-meaning-deafness,' but only a certain degree of 'word-sound-deafness,' as the patient recognises the sounds of words as speech and repeats, although imperfectly, the name of the object heard. The defect revealed, however, is compensated for to some extent by a new field of perception based upon the patient's knowledge of lip-reading.

In Test II—the naming and recognition of colours—the same contrast was not apparent between the responses when the observer was seen and those when he was out of sight. It must be remembered, however, that the patient had received a very imperfect education in lip-reading and it is doubtful if that education included the names of the colours used. In most of the tests of this series he merely repeated the name of the colour as he heard it and probably not as he saw it, before responding to the oral command.

In Test III—the man, the cat and the dog test—the same contrast between the responses to oral commands out of sight and those when the observer was seen was apparent, although not quite to the same extent as in the naming and recognition of common objects.

In Test IV (clock series) and in Test V (coin and bowl series), the oral commands issued depended for their response much more upon the power of 'propositionizing' than did the previous tests and in consequence did not reveal the same contrast between the responses in the two parts of the tests. In the tests as a whole, however, it was obvious that, in those which depended upon the simplest of 'propositionizing' only, there was a decided contrast between the proportion of correct responses to oral commands in the two parts; and that this contrast diminished and disappeared as the 'propositionizing' required increased in complexity.

(2) *The executive side—speech disturbance.* If the nature of the disturbance of speech and language occurring in the patient studied is to be understood clearly, in the interpretation of the clinical picture and the results of the various tests applied allowance must be made for the primary defect from which he has suffered from birth. If the speaking of 'conventional' language be taken as the standard, his word-formation is performed with the greatest difficulty; on the other hand, if the use of 'individual' language—or in the words of earlier writers, 'idioglossia'—be taken as the standard, the patient is almost eloquent. As we have stated elsewhere[1], this individual language was probably constructed from the constant repetition of words as they were heard, without any appreciation of variations in tone and stress, and partly from the imitation of movements performed by others during speech and expression. Under these circumstances, the individual language or idioglossia could be regarded merely as a means of expression based upon the use of mispronounced conventional words, and the patient described as being extremely defective in word-formation. Sometimes he would utter complete sentences, but as a rule his speech was confined to single words. Intonation was imperfect throughout, and enunciation at times slow and halting, though at others several words were spoken fluently in the individual language. He applied correctly an individual word to each object shown (Test I) although, from the conventional standard, the word spoken was so badly pronounced as to be recognisable only by those who had become accustomed to the individual language. The spontaneous use of words was extremely faulty, and in naming letters of the alphabet spontaneously it was apparent that the first sounds that came were seized upon and used as names (Test VII), although in naming objects (Test I) and colours (Test II) the individual names were, as a rule, correctly applied. The patient rarely spoke spontaneously and most of his utterances were in response to questions or to gestures. When attempting to repeat what was said to him, he used many more words than he did spontaneously, but the sounds articulated were imperfect; and as fatigue occurred he either failed to respond or used a strange sound which bore no relation to that spoken by the observer (Test VII). Words were certainly abnormal in structure and, in fact, formed what has been referred to in this communication as an individual language or idioglossia. This individual language was spontaneous enough when occasion demanded, and the idioglossic words were

usually applied correctly. Frequently, however, fatigue or imperfect acquaintance with a word resulted in the production of sounds which could only be termed 'jargon' (Tests II and VII). When the main defect—word-meaning-deafness—was excluded as far as possible by naming an object in his sight or in print, it was chosen with reasonable accuracy, but in both cases some errors were made (Test I). Commands necessitating choice (Tests V and VI) were not carried out correctly.

Writing was possible but exhibited the same errors as articulated speech. Spelling was imperfect, but usually certain combinations of letters or slight variations from such combinations were applied correctly (Tests I, II, and VI). From this it might be concluded that the individual language was applied in writing though somewhat less imperfectly than in speech. Writing from dictation with the speaker seen was better, although even so short a phrase as "the cat and the dog" could not be retained in the memory sufficiently long to be reproduced with success. There was no difficulty in the copying of printed matter; in fact, this was done exactly even to the relative positions of the words to one another.

Reading printed commands aloud before carrying them into execution (Tests V and VI) did not produce better responses than reading the commands silently. The patient exhibited little tendency to read of his own accord either to himself or aloud. He was, however, fond of looking at pictures and apparently enjoyed doing so.

The significance of numerals was apparently appreciated fairly well (Tests IV and V), but the appreciation of their verbal aspect was certainly very deficient (compare (*a*) and (*b*), Test V). Simple arithmetical problems were carried out correctly, but when faced with the task of subtracting involving borrowing, the patient had to resort to the device of subtracting the smaller numeral from the larger, irrespective of the numbers of which they formed a part. In one instance an interesting example of 'perseveration' was noted (Test VIII). Drawing, the playing of games and the appreciation of pictures were unimpaired.

It is apparent, therefore, that when considered as far as possible apart from the congenital auditory defect, the patient suffers from a disorder of speech which affects mainly verbal structures and words as part of a phrase, while the appreciation of their nominal value and significance is comparatively good; that is, in Head's nomenclature, he exhibits 'verbal aphasia.' It follows that the 'idioglossia' of Guthrie,[3] Hale White,[4] McCready[5] and others, the 'individual language' referred to in this communication, and the 'verbal aphasia' of Head are identical as regards the nature of the actual speech defect. As the study of our patient indicates that his idioglossia has developed as a result of congenital auditory imperception or congenital word-deafness, it is probable that cases recorded and described in medical literature as idioglossia have a similar congenital auditory imperception. Guthrie,[3] indeed, appears

to have reached the conclusion that his cases of idioglossia depended upon some auditory defect short of actual deafness. This is a subject, however, which we hope to deal with more fully in a further communication.

THE VALUE OF HEAD'S METHOD IN THE INVESTIGATION OF CONGENITAL APHASIA AND THE STANDPOINT FROM WHICH THE RESULTS SHOULD BE INTERPRETED.

Head's method of investigation was applied by him to only one congenital case, that of an individual who by virtue of her age and education had every opportunity of compensating for her defect. Her disabilities in speech and language, therefore, were so much obscured that it required a detailed and careful method of investigation to reveal the essential nature of her disorder. The method has been used comparatively infrequently in adult cases and more rarely, if at all, in congenital cases. On this account, the opportunity has been taken of investigating our patient as far as possible by Head's method, of placing the results on record and of considering the value of the method in such a case. A patient suffering from congenital aphasia is a much more difficult subject to investigate than is the individual who has been afflicted with a speech disorder in adult life. If such congenital cases are to be investigated in childhood—as they must be if the patient's education is to be placed upon a correct foundation and the results used with any prospect of success in the investigation of aphasia—it is possible that it will be found that (1) the means of communication with others is so imperfectly developed that this "searching and subtle" method of examination proves practically useless; (2) that there is a complete blank or at best a very imperfect background of knowledge to draw upon or to serve as a basis for the tests; and (3) that the method of approach, therefore, must be exceedingly simple. In many cases the primary defect is of a gross nature and detailed methods of examination are needed only when investigating the associated speech defects from the scientific point of view. It is true that the individual whose primary and fundamental defect is 'congenital word-blindness' often has his auditory impressions to draw upon and can be taught through this channel, and that he whose primary defect is 'congenital word-deafness' has his visual impressions to draw upon and can in course of time, though with less success, be educated through that channel; such cases can be, as our patient has been, more or less completely investigated by means of Head's tests. Simplicity, however, is still necessary, at least for clinical purposes, as the interpretation of the results is rendered exceedingly difficult by the need of separating those findings which depend directly upon the primary congenital defect from those which depend upon the affection of speech and language which complicates it. The last named difficulty applies equally to the investigation of such cases from the standpoint of the abnormality itself. There is a further difficulty which has been apparent in the attempt to interpret the results of the investigation in the case reported, viz.: from what standpoint the results should be

considered, whether with the average normal child as the standard—the only standard which can ever be used in a subject which has never been normal—or with a complete absence of both knowledge and speech as the standard; in other words, whether the abnormality should be judged upon what the subject lacks or upon what he has been able to acquire in spite of his congenital defect. If the former standard be adopted, it is necessary to consider only the patient's errors in the individual tests; if the latter, it is advisable to attempt to work out the significance of every resemblance and substitution in the patient's responses. In the adult case, it is reasonable enough to accept as the standard either the average normal for the age, mental level and state of education, or the performance of the patient before the onset of the lesion, for he has either been in full possession of his powers of speech before the onset of the aphasia, or had ample opportunities of 'compensating' in at least some measure for his defect. With this standard, the adult case is naturally judged upon his defects in the sphere of language. But the congenital aphasic is in quite a different position; his background is a complete blank; his defects are not what he has lost because of a lesion, but what he has started life with; he has whatever speech he exhibits because he has been able to acquire it in spite of his primary defect, and not as in the adult, because he has something left after part of his speech mechanism has been destroyed; he has no standard upon which to be judged, and he might more properly be discussed upon the basis of the speech he has been able to acquire than upon the mistakes he makes when compared with a varying normal of the same age.

The application of Head's method to the case of 'congenital auditory imperception' discloses rather more than does the ordinary routine method. Also, it emphasizes the salient features of the disorder on both the receptive and the executive sides. The word-meaning-deafness is apparent and a greater degree of word-sound-deafness is shown to exist than was suspected. The tests demonstrate that the only form of visual agnosia present is some degree of word-meaning-blindness, which is greater for conventional written language than for the individual written language. The complete absence of word-sight-blindness and of tactile agnosia is shown. The method demonstrates an almost total agraphia as regards spontaneous written-speech for conventional language, but only partial agraphia for the individual language. With perfect 'word-sight,' the patient is able to copy correctly written language and symbols. Nevertheless, as regards some of the tests, we must agree with Kinnier Wilson[9] in his criticism that the ingenious scheme devised by Head for the study of aphasic patients consists of tests for the wider disturbances of 'apraxia' and 'agnosia' which are included as tests for speech defects only by unduly enlarging our conception as to what the term should connote. At the same time it should be pointed out that Head[2] has stated definitely that the disorders of language resulting from a unilateral cerebral lesion are never exclusively affections of speech, reading or writing, for not only may the power to carry out one of these be partial, but the disturbance may extend beyond their limits and affect other mental activities.

SUMMARY AND CONCLUSIONS.

(1). The investigation of a case of congenital auditory imperception by Head's method is described in detail. In a previous communication describing the case, word-meaning-deafness was shown to be the most important element of the defect, but some degree of word-blindness and agraphia was demonstrated as well as a pronounced speech defect of the nature of so-called idioglossia.

(2). In order to distinguish between the patient's actual word-hearing and his ability to lip-read, the method has been varied in one particular from that employed by Head for the investigation of cases of aphasia.

(3). Each test of the series is shown in tabular form with comments on the results obtained, and a summary of conclusions added.

(4). As regards the capacity and defects of the patient, both on the 'receptive' and 'executive' sides, the final conclusions from the series of tests may be summarised as follows:

A. Receptive Capacity.

I. *Auditory Perception.*

(1) Word-meaning-deafness is absolute (Tests I, 3; II, 3; III, 5; IV, 3; VI, 6; VII, 3 and 5) but there is some appreciation of spoken numbers (Test V, (*a*) 2 and (*b*) 2).

(2) Word-sound-deafness is only partial. The patient distinguishes word-sounds from other sounds, but repeats only imperfectly the words he hears spoken in conventional language (Tests I, 3; III, 6). Even letter-sounds are not repeated perfectly (Test VII, 2).

II. *Visual Perception.*

(1) No evidence of visual agnosia, e.g., for common objects (Test I, 1), for colours (Test II, 1); he can imitate the positions of the hands of a clock (Test IV, 1) and can draw objects seen (Test IX, *a* and *b*).

(2) Visual-memory for images is normal, e.g., for common objects (Test I, 1), for colours (Test II); and he can draw from memory, e.g., animals (Test IX, *c*).

(3) Word-meaning-blindness: (*a*) There is some degree of alexia in the sense of word-meaning-blindness for conventional language, e.g., for printed or written commands (Tests V, (*b*), 3 and VI, 7 and 8); imperfect interpretation of printed names of objects (Test I, 4) and colours (Test II, 4). There is, however, no such alexia for letters (Test VII, 6) and only to a very slight extent for numerals (Tests IV, 4; V (*a*), 4; VIII, 1).

(*b*) For the idioglossic symbols written by himself, there is only slight word-meaning-blindness (Test II, 7) but he uses idoglossic terms in reading them aloud.

(4) Word-sight-blindness : (*a*) There is no word-sight-blindness for conventional language ; he copies printed (or written) language perfectly (Test III, 8) ; nor for numbers (Test IV, 5 and 6 ; Test V, (*a*) 4).

(*b*) No word-form-blindness for idioglossic symbols (Test III, 7), which he reads in idioglossic language.

(5) Lip-reading : Lip-reading is moderately good, but by no means perfect, e.g., he is good at interpreting names of common objects (Test I, 2) ; moderate at simple numerals (Test V (*a*) 1) and letters (Test VII, 4) ; imperfect at less common names (Tests II, 2 ; III, 4 ; and V (*b*) 1) and very imperfect at commands (Test IV, 2 ; V, 6).

III. *Tactile Perception.*

There is no tactile agnosia ; stereognostic sense with consequent image formation and correlation with that of visual memory is normal (Test I, 5).

B. Executive Capacity.

I. *Speech.* The patient exhibits idioglossia. He has an idioglossic term for almost every letter of the alphabet (Test VIII, 1) and for each number (Test V, (*a*) 4) ; an idioglossic name for each common object (Test I, 6) and for each colour (Test II, 5) ; he uses an idioglossic term consistently for the same word (Test III, 1 and 2) ; interprets the time from a clock in idioglossic language (Test IV, 5) ; and attempts to read written conventional language by using idioglossic terms (imperfectly) (Test V (*b*) 4).

II. *Writing.* (*a*) For conventional language, expressive agraphia is almost complete. (Tests I, 7 and II, 6). No total agraphia, since he can copy written language perfectly.

(*b*) There is slight expressive agraphia for idioglossic language (Tests I, 7 ; II, 6 ; VI, 9).

III. *Imitation of Actions.*

(1) Imitation of movements involving positions of the arms—when facing the examiner all movements correctly performed, but transposed, e.g., right for left and vice versa (Test VI, 1), also when represented pictorially (Test VI, 7). Absence of *innerspracht* necessary to translate right into left.

(2) Imitation of the movements seen in mirror—all correctly performed (Test VI, 2), also when represented pictorially (Test VI, 4).

IV. *Arithmetical ability.*

(1) Addition : The patient is able to do simple addition sums even involving carrying over (Test VIII, 1).

(2) Subtraction : He is able to do simple subtraction sums, but not involving borrowing (Test VIII, 2).

(5). The general results of the examination by Head's method are described and the deficient background of congenital aphasia contrasted with that of acquired aphasia.

(6). The findings, therefore, are further considered from the point of view of what the patient has been able to acquire in the form of language, in spite of his primary disability, rather than from the standpoint of what is defective.

(7). The application of Head's method to our case of congenital auditory imperception disclosed rather more than the ordinary routine method and emphasised more definitely the salient features of the disorder, on both the receptive and the executive sides.

(8). It is doubtful if Head's method of investigation will prove of value in congenital aphasia, as in the majority of such cases means of communication with other individuals is so imperfect and the background of knowledge so deficient that any method of approach has of necessity to be very simple.

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GROUP PERSONALITY IN NEUROTICS.

By DOUGLAS R. MACLACHLAN, Argyll.

At the Cassel Hospital for Functional Nervous Disorders the writer had the privilege lately of meeting the patients socially, and it seemed to him rather a good opportunity to study the behaviour of the neurotic as an entity of society. There are few hospitals where the patients are entirely of this class; where, indeed, a neurotic society is created; and, as far as the writer is aware, no study of such a society has been made. It is the very physician who specialises in treatment of functional nervous disorders who has no opportunity of seeing his patients away from the atmosphere of the consulting-room, of noting how they attempt to combat the difficulties which they find in the everyday world. With the object, therefore, of presenting the point of view of the neurotic himself this paper is written, in the hope that it will be of use to those who practise psychotherapy.

The writer would like to make clear at once the meaning which he wishes the word 'neurotic' to convey. As this is a study of patients suffering from functional nervous disorders, irrespective of whether their individual illnesses may be neurasthenias, hysterias or obsessional states, the word 'neurotic' will be applied to them all. A neurotic is a patient who is suffering from a nervous disorder and in whom no physical lesion can be found to account for his illness. To make clear the distinction between the psychotic and the neurotic the following quotation from *The Common Neuroses*, by Dr. T. A. Ross, is used. "The psychotic lives, in so far as he is a psychotic, in a world of phantasy, the neurotic in a real world; its difficulties are greater by far for him than they are for normal people but they are the same difficulties which all of us have. The difficulties of the psychotic arise from the fact that he is living in quite another world, in one which is not subject to the same physical laws."

THE NEUROTIC AS A SOCIAL ENTITY.

(1) *His Attitude towards the Normal Individual.*

Naturally enough there is in the neurotic a latent jealousy of the normal individual. Indeed, it may be said that anyone suffering from ill health is jealous of those who are perfectly fit; but the neurotic feels almost resentful of good health in others. The tuberculous patient or the patient with a fractured femur harbours no ill-will in his envy of those not so afflicted because he is not ashamed of his infirmity. There is no stigma imposed on organic disease. Not so with mental illness, for tradition has attached to it a hopelessness and contempt which are hard to bear. "Once insane always insane," is a sweeping dictum in which the general public take lugubrious delight; and no distinction is made between neurosis and psychosis. To have a mental

illness is to be disgraced, to be despised rather than pitied. The neurotic with his hypersensitiveness and extreme fear of insanity exaggerates this and feels rather touchy about the whole business.

Two incidents will illustrate his attitude. The Cassel Hospital is the only large house on a certain 'bus route likely to have a number of a certain social class staying at it ; and, in consequence, the bus conductors can recognise a Cassel patient fairly readily. Now, whenever a conductor demonstrates this by handing a patient his ticket without asking his destination, the incident is retailed with great wonderment and laughter. But the laughter is hurt laughter and there is a vague fear in the wonder. The neurotics seem to fear that they can be recognised by the fact that they differ in some way from other people. Again, a certain patient had been playing tennis all morning and after lunch was, in consequence, playing very poorly. But immediately afterwards, in a set against one of the resident doctors, he played brilliantly, contrary to all expectation. There was almost a note of viciousness in the satisfaction with which he smashed cross-court drives which the doctor could not possibly take. Yet this same man, in the normal way, was a most sporting and considerate opponent. This patient had no doubt had a strong inferiority complex and felt in most respects inferior to the doctor. But on the tennis court he knew that he was superior and determined to make the most of it. No doubt it gave him a splendid feeling of well-being to demonstrate his superiority.

(2) *Attitude towards other Neurotics.*

Towards each other they are wonderfully charitable and kind. It is as if they, out of their own pain and trouble, were more acutely aware of the suffering of their fellows and more ready to help them. On the other hand their great desire for sympathy may make them extend it to others in the hope that they will themselves be rewarded with a similar sympathy when they feel in need of it ; or, again, their motive may be actuated by their pride in saying, "I know just what it is myself." But whatever the cause, the neurotic is almost tender to his fellows. In almost startling contrast to this it can be noted that when two normal people have a headache they are not kind to each other. When anyone is more ill than usual, one hears on all sides apparently genuine expressions of sympathy, and the sufferer is treated very gently. The newcomer, too, receives great kindness and consideration, and many who are recovering adopt protégés from among the new patients. Whether it is altogether good for the protégé is quite another matter, but it is significant that the custom is a popular one. To the normal individual this atmosphere of sympathy and kindness might be found too cloying to be stimulating. The absence of conflict and friction, which render a normal society stimulating, might make the healthy individual long for ' sterner stuff,' but there is no such desire in the neurotic. Genuine rudeness, ragging and badinage do not exist.

It is not an absence of humour but an absence of robustness and easy tolerance —an avoidance of controversy and what to them would be unpleasantness. They swear neither politely nor impolitely at each other. So, too, there is an abundance of easy praise with no dislike of compliments and the obviously untrue, for this makes for a superficial pleasantness in social intercourse. That it also makes for the absence of joy and the lack of refreshing vitality in no way disturbs them. Social life for them is an eternal afternoon tea-party where they eat the sugared cake of each other's sympathy and balance the teacup of their existence politely but insecurely on the knees of reality.

It is easy to understand just why the neurotic creates or seeks to create such an atmosphere, because the strength and energy which the normal individual expends in healthy conflict with his fellows, are, in the case of the neurotic, sapped by the fixation of his energies on his obsessions and fears; this leaves but little excess to be wasted even on the most mild conversational conflict. Again, because his anxiety or obsessional state has caused a formerly pleasant world to assume the characters of a veritable hell the neurotic finds existence very hard. Few people are capable of understanding his suffering and all tend to be unsympathetic and cold. His desire, therefore, if he has any part in the shaping of his environment, is to make it as innocuous as possible, as soothing a haven as his tortured imagination can devise.

It has been noted that the neurotics are critical of one another. There is an atmosphere of watchfulness which is distinctly above the average, but it must be pointed out that a greater part of their watchfulness is engendered through fear that they themselves are being talked about, ridiculed, or thought unusual. Their inferiority-complex makes them suspicious of this. They are like a herd of cattle made restless and watchful through fear of something unknown. None the less they are critical of each other, often in superficial things at least, for there are few more correct in manners or popular beliefs than the neurotic set. Their belief and social code are simple because they seem as incapable of criticism of accepted codes as they are of original thought on any abstruse idea. They are, therefore, narrow-minded, and being narrow-minded are resentful of anyone who diverges from their own simple faith. Their religion is that of the Forsytes, their fear of the sexual that of their Victorian ancestors. It is this very social correctness which divided the patients at the Cassel Hospital, during the writer's stay, into two large sets. And bitter was the enmity between them. One set was younger and more modern than the other and was regarded by the latter as rowdy and boorish. The original breach of etiquette which earned them this reputation is no doubt long forgotten, but each new patient perforce joins one or other set and dislikes the other cordially, which shows that their power of likes and dislikes is quite unimpaired. These two large sets are split into smaller sets who generally group around one person, occupation or recreation; and these smaller sets are again divided into people who have fixation of affection on each other. The writer does not deny that a

precisely similar state of affairs takes place say on board ship, but he wishes to emphasise that with neurotics the whole position of affairs is more acute. It matters more to them ; they are more childish about it. What happens in a normal society is exaggerated and carried to extremes.

(3) *Conversation.*

With regard to their conversation the neurotics can be roughly divided into three classes :—

A. Those who talked with maniacal incessancy, 5 per cent.

B. Those who hardly talked at all, 15 per cent.

C. Those who were rather more silent than the normal, 80 per cent.

Very often those of class B pass into class C as they recover somewhat. The neurotics of class A invariably choose subjects for conversation reminiscent of their past life, in which they seemed to have met a remarkable number of noted or world-famous people, which no doubt is a compensation for their inferiority. They seem to be totally unaware that they talk excessively and complain bitterly when they have to sit at table with another of their class. As can be imagined it is amusing when three or four of them meet together.

Those of class C in general tend rather to grumble about their illness, bad luck or environment. Yet they do not pay too much attention to what their neighbours say but are engaged in their own thought or in thinking of what they are going to say next. A small section of this class are thorough malcontents and Ishmaels. They revel in conversations in which " The doctor said . . . . " and " I said to him" figure insistently and interminably. In such a conversation great satisfaction is felt when the patient says something rude or nasty to the doctor and sympathy is felt for those who are " told off " or " dressed down " by their doctor. Their argument is that they are paying so much per week to be cured and that they ought to get cured without following the doctor's advice or treatment and with no effort on their own part.

To the neurotic, of course, the most interesting subject of conversation is himself or his illness. And in talking of himself he does so with considerable naiveté and lack of guile, as will be apparent by the following examples.

The writer was talking one day with Miss H—— when Mr. H——, a new patient, appeared downstairs for the first time. Miss H—— was greatly struck by his facial appearance. In all seriousness she said that he was a " strong silent man," a " man with a far-away look in his eyes," and was grateful for the writer's suggestion that he might be a " man from the great open spaces where men are men." After further study she added that he had " a hawk-like look in his eagle eyes." In point of fact he was an ordinary-looking middle-aged man who appeared rather miserable. Later the writer saw them walking up and down the lawn deep in conversation. He was telling her his life-history—matrimonial and otherwise. They had known each other for half an hour. The writer asked her, when she told him this, whether she

had felt embarrassed when that flood of intimate and private detail was poured so lavishly over her. She replied that she had been deeply interested and why should she have been embarrassed ?

This desire to pour a flood of private life-history into the ear of anyone who will listen is fairly characteristic of the neurotic. But one notes that they only tell the unimportant parts and the parts in which they can expect sympathy. Theirs is a tale of woe, hard luck, injustice or difficulties from which they can never free themselves. Indeed they are extremely resentful of sound common sense or advice. Sometimes they will tell you things which they have hidden from their doctors but they will never tell you their doctor's view of their case. In short they cover the roots of their illness with a subsoil of misleading detail which does not in reality trouble them.

Again, a patient, apropos of nothing at all, told that Dr. R—— had come into her room and found her in a state of undress. She added with childlike innocence that she loved sitting in this particular garment. " What did he say ? " someone asked. "'He was very nice about it," she replied, " and said that I had better get dressed more fully in case another patient should come in." It is interesting to note that this patient wore her dresses extremely short above and below, and loved to be told that she was indecently dressed. Yet she could not have failed to know that she had an exhibitionistic complex and to be aware of its significance. But though she did know she simply did not apply it personally to herself. This is a marked characteristic of the neurotic crowd. They hate to think that they differ in any way from the normal.

In general the neurotics gossip a lot, but no importance can be attached to this, regrettable though it may seem. It is inevitable among people who have so much time on their hands and is indeed not uncommon in any walk of life. But a rather amusing fact is that many of them save up the choice bits of gossip for their doctors, as if the daily interview was the raison d'être of their existence and of their gossip.

What one does miss from their conversation is the " Sunday paper " element ; by which is meant current murders, rape, divorce, accidents, floods, disasters, fires and acts of God. These things frankly are fascinating and enjoyable to the average man and woman, for they talk about them, read about them, and go to see them on the screen. But to the neurotic they appear perhaps more in their true light. To him horrors are horrors, the gruesome is gruesome, and he avoids them, so that, in the main, conversation is simple and unaspiring but quite pleasant and enjoyable. It is like the conversation at a children's party in which the children have lost their natural vigour and rudeness.

(4) *Physical Attitude.*

We must next study the physical attitude of the neurotic. What strikes one as differing greatly from the normal is their listlessness and apathy. Young adults who normally would be full of energy and boisterous spirits move about

as if pressed down by a load of years, or are content to sit doing nothing as if deadly tired. Even when playing games only about one per cent. are at all active. They do not dance or play enthusiastically and one seldom or never sees on their faces that expression of healthy satisfaction and joy which is characteristic of active bodily exercise. This was very well seen when, for instance, some of the staff were playing tennis with the patients. At meals they tend to seem bored with their food, but this air of boredom is assumed, to disguise the fact that they are nervous and frightened of eating in public. On closer inspection one can see they dread going to meals and sit wishing that it was over while they are in the diningroom. The reason for their apprehension is that they fear doing anything which will compel them to remain in one place for any fixed time, or of being in a place from which their exit might be noticed or commented on. They are hypersensitive to the opinions of others.

A great number of neurotics are characterised by their almost catatonic capability of sitting absolutely still for long periods gazing with blank eyes in front of them. But they pull themselves together quickly when spoken to, as if activated by a desire to appear normal.

One begins to see after a time that their laughter lacks gaiety, their conversation enthusiasm, and their activities purpose. In short their attitude is pre-occupied. This lack of what Bergsen has called "élan vital," Freud "libido," and MacDougal "hormé" is an important characteristic of the neurotic. It is not, in the writer's opinion, due to an introversion, to a withdrawal from reality, but to the neurotic's ever present fear or apprehension. If a neurotic withdraws from reality it is because that specific reality is extremely painful to him. His impulse, in fact, is often not to withdraw into himself but away from his fellows. For example, he may rush from the room when the conversation is unpleasant, or away from a street accident. And it is his apprehension of having to do that or his fear of being unable to go on doing what he is doing at the present which prevents him from entering fully into any activity. The result is a lack of "élan vital."

(5) *The Neurotic's contact with Reality.*

It is extremely difficult to generalise with regard to the extent to which the neurotic is in contact with reality. A stranger with no knowledge of neurotics would not find the patients at the Cassel Hospital differing greatly from the usual crowd at an hotel or hydropathic in their interest in newspaper news. Newspapers are read with keen interest but it is only the more pleasant news which is read; accounts of murders are not read or discussed. They take a fairly average interest in sport, politics and current events and can discuss such topics freely. Where they differ from the normal hotel crowd is in the emphasis which is placed on the outside world being the outside world, and on the fact that there is a huge difference between living at hospital and living in the outside world. They feel as if they were living at the end of the world instead

of being only within a short distance of London. The reason for this feeling of remoteness from the outside world is undoubtedly that they are afraid of it. Life outside the hospital is difficult and rather frightening to them, and they dread leaving its security to go back to a life which they were driven to give up.

But their vivid interest in life within the hospital is very marked. It is as if they felt that here was a society in which they could live pleasantly and without fear, and that they were going to make the most of it. They discuss events and each other with huge interest and are keenly alive to the most minor incident.

One thing, however, which is worthy of note is that no one individual is as keenly alive to his surroundings as the normal person is all day. There are times when their interest vanishes and they retire to their rooms or to a quiet part of the grounds. Nor can one retain their interest in a game of occupation for any length of time. A tournament which will last longer than an hour will be a failure. Patients will talk or play bridge brilliantly perhaps for an hour at a time but they do not seem to have the strength to go on much longer than that. Thus individually they may be apparently wholly extroverted for a time, but never for very long.

When their interest in a conversation or game vanishes it seems to do so because of two factors : firstly, because they seem actually to get tired physically or mentally and secondly, because they are worrying about something specific. This something blocks their thought or activity. They do not retire into themselves ; they are called away, as it were, on urgent business. Something, which is usually a phobia, turns up and they must give it their undivided attention.

(6) *Attitude towards Work.*

At the Cassel Hospital patients are expected to have something to occupy their minds and hands between the hours of 10 a.m. and 12 noon. The choice of occupation is wide, ranging from hard physical labour, in which no one indulges, to art and kindergarten crafts. The latter cannot be called popular, but they claim the attention of many patients. And it is called work with a large capital W. No galley slave, no sweated labourer ever harboured more resentment against his masters than these neurotics do against the patient lady who endeavours to teach them childlike occupations. One and all are convinced that they are being unjustly worked to death and harbour appropriately bitter feelings about it. One physically robust young girl told the writer that she was a Marxian materialist and that she had on that ground moral scruples about making raffia bags. The writer pointed out that no one would dream of buying or even accepting one of her bags as a present but she still persisted that she was depriving numbers of raffia workers of an honest living. This same young economist refused to make her own bed, keep her room tidy or make up her own fire on the plea that she was depriving the maids of honest toil. Yet she failed utterly to apply her theories to her own case, so much so that her general uselessness to society would have made Herr Marx mad with despair.

Yet in the abstract they have great admiration for work and may even applaud it. One morning Mr. M. came into the workshop with a look of firm determination and announced with an air of grim triumph that he was going to work. Mr. L. feeling less virtuous tried to persuade him to cut work and play tennis. He talked eloquently for ten minutes, telling Mr. M. just why it would be sheer madness to attempt anything but tennis that morning, but Mr. M. stood firm for work. To the writer's surprise Mr. L. then said, "That's right, Mr. M., there is nothing in the world like good, honest, hard work," and went off to play tennis.

The following conversation took place in the drawingroom before lunch one morning when several people were resting after their morning's toil.

Miss B.: "And what were you working at this morning, Miss D.?"

Miss D. (rather shortly): "I never work."

Miss B. (thinking this is undue modesty, graciously): "Oh! you work very hard, dear."

Miss D.: "I amuse myself a bit, but I have never *worked* here and have never seen anyone else working either."

Indignant howl of protest from all present. Miss D. very unpopular. Miss B. retires to her room, presumably in tears, and does not speak to Miss D. for days.

If there is one form of work which is popular it is work on the wood pile; rather one should say that wood-cutting is borne with more grace and forbearance than any other form of work. It requires less expenditure of energy to engage oneself in simple gardening or in looking after golf course greens than to saw and cut wood, but, despite this consideration, important though it is to the neurotic, the latter retains a much greater popularity. The writer has come to the conclusion that the only adequate reason for the popularity of wood-cutting lies in the fact that it gives greater scope for the self-assertive instinct. It may be that the neurotic feels satisfaction in giving vent to this primitive instinct, if it be true that it is a relief to indulge a primitive instinct when a higher instinct is hurt. For example, when anyone is jilted rudely and suddenly by a lady with whom he is æsthetically in love his impulse is to find the nearest prostitute and indulge his primitive passions to the full. An individual may also become æsthetic with regard to food—may even become a vegetarian—but if he has any experience which makes him lose faith in his æsthetic attitude he will, in all probability, straightway gorge himself with the very food which he lately despised. Or again, year after year as the summer vacation comes round highly cultured people hurry to remote parts of the country in order to live as primitively as they can. The writer has seen professors, famed for their culture and learning, sweeping the doorsteps of a two-roomed tin-shanty with a look of contented happiness on their faces, and society ladies drying dishes with no less evident satisfaction. Their culture seems to be made all the more bearable by their living in an uncultured environment for a month or so every year. The neurotic is an individual to whom

cultured existence is terrifying, who has found life as he has formerly lived it unbearable, and who has in self-defence slipped back to the childish. As a defence this regression is admirable because by becoming childish one can, without loss of self-respect, be terrified and receive comfort, can shelve the responsibilities of one's age and become dependent on some other person, and finally be absolved from the necessity of working or living a normal grown-up life. There have been recorded cases of patients who have reverted entirely to childhood in habits, behaviour and speech ; but such a procedure would carry with it a loss of self-respect and the advantages of being grown up which would be hard to bear. The neurotic manages to retain the advantages of being grown up and behaves as such to the casual observer and reverts to the childish only in as far as it will make life less difficult. In other words the change is neither gross nor obvious, but it is sufficient to meet its purpose. Those who have studied the psychotic know how dramatic the regression can be in, for example, the schizophrenic. The process of regression in the neurotic is the same but to a much less degree evident.

As an example of this childlike mind of the neurotic one might consider their attitude towards their doctors. At the Cassel Hospital each patient has an interview lasting for about an hour with his doctor each day. These interviews become the centre of their existence. They seek advice for the little problems which arise in their everyday lives, they relate the trials and tribulations to which they are subjected and they do not forget to mention the deeds and words of others if they be interesting enough. Their doctors in this way become confessors and gods, all-wise and ever ready to help, while they, the patients, become their worshipping children. The following example will help to make this clear.

Miss B. and some others were discussing the number and duration of their daily interviews. They wondered whom they, the doctors, talked to when they wanted help and advice. Miss B. said scornfully that doctors never wanted advice ; how could they when " they knew everything ? " They were sufficient unto themselves.

The beliefs of the neurotics are childlike. For example, one finds, among every set of neurotics, people who believe in witches, ' evil eyes,' fairies, ghosts and all the personæ of the mediæval necromancer. Many of them are believers in spiritualism.

Miss C. asked the writer what the cause of hay fever was and immediately Miss B. said that it was caused by an evil spirit. On being asked what she meant by " an evil spirit," she replied, " Well, doesn't it say in the Bible that evil spirits . . . . . "—her reply trailed off. The writer explained, tentatively, that people of the time of Christ regarded an epileptic as one afflicted with an evil spirit, and added that it was, from their point of view, a satisfactory explanation of the disease. Miss B.'s eyes grew round, " Then it isn't caused by evil spirits ? " she asked wondering and adjusting her mind to this new belief.

"Who said it wasn't ?" asked Mr. ——, suddenly, indignantly, and with a determined air. But when the writer admitted that he had, the determined look faded from Mr.——'s face, and his enthusiasm waned. He mumbled something and the talk drifted into another channel.

Not only in mind, but physically, are the neurotics infantile. Let him who prides himself on his ability to judge age go to a psychiatric clinique and he will find himself baffled time and again. The best examples are those who have been almost 'backward' as children and who develop a neurosis in later life. They live at home and allowances are made for them. Life passes them gently and they may reach the age of thirty or forty, unwrinkled and childlike. Even the normal person may find that life has this subtle trick of sliding past without making any impression; many are much younger in experience than in years. These people, among people of stable mentality, are a small minority, but the same cannot be said for the neurotic.

THE NEUROTIC AS AN INDIVIDUAL.

We now come to consider the neurotic as an individual. Much has been written about this subject and the general impression gained is that the neurotic is a person to be despised, pitied and avoided. He is represented as a person who, through perhaps some mysterious weakness in character, has become a coward and a shirker—that he is an almost unpleasant companion to live with. Such has not been the writer's experience. Rather the neurotic should be regarded as a person who through environment or experience or inherited tendencies has a hypersensitiveness of affect—is 'tender-minded.' For the normal individual it requires courage to stop a runaway horse, to go into a burning building, to 'go over the top,' and quite justly he receives praise when he so risks his life. But to the neurotic it may require even more courage to have a meal in a restaurant or to go to a theatre. He, on the other hand, does not receive praise for his heroism in doing these things because the normal individual finds pleasure in theatre-going and cannot imagine anyone being afraid of it. Such is the popular present-day attitude of the lay public to the neurotic, but there is no excuse for the physician's taking up such an attitude. Our knowledge of the pathogenesis and treatment of neurosis is so far limited, but we can realise that the neurotic is suffering from a definite disease from which he can recover if properly looked after. It may lead us to a better understanding of the obsessions and fears of the neurotic if we consider the pathogenesis of a typical case.

It is usually the case that the illness is fairly well advanced when the patient comes to his doctor. He will complain of being "afraid of everything." On investigating the case his doctor will find that a year or perhaps five years ago the patient, for no reason that he could see, fainted at his work. Next day he had another attack and so on till he went to a doctor who gave him a bottle and sent him away for a week's holiday. Feeling somewhat better he came back and perhaps had no other fainting turns, but found that he was afraid of his

work. Next he noticed that he was afraid of travelling in a train, and then successively of going to a picture house or church or any entertainment, of eating in public, of sleeping, of meeting his friends, until slowly and surely fighting against it, forcing himself to do things he was madly afraid of, worrying lest he should be going mad, he was driven into a state of being " afraid of everything." He cannot sleep at night, develops gastrointestinal disorders, gets thin and out of condition and suffers from pronounced asthenia.

On investigating his case further the physician will find that there was a definite reason for his being afraid of his work and for his fainting for the first time. It might be an incident in his childhood or a series of incidents or circumstances throughout his life which led up to this initial attack. If these are explained to his satisfaction and he is made physically fit again he may go back and tackle his big fear—the fear of doing his work—find himself fit and return to normal life with joy.

From this case we learn firstly that the neurotic personality can be created, apparently, in a normal individual. But in the writer's opinion this is a thing which seldom happens. It may be that a normal individual has an emotional shock which results in his developing a neurosis, from which he will recover completely, but in the great majority of cases there is, as it were, an initial ' tender-mindedness ' which renders the patient liable to this form of illness. The neurotic has no natural immunity to emotional upset. Immunity is used here because a distinct parallel can be drawn between immunity to bacterial infection and immunity to emotional instability. On the one hand the neurotic seems to have an anaphylaxis to one form or other of the neurosis and on the other hand an anaphylaxis can be created in a person previously immune by successive doses of the fear of a particular thing. Again, an active immunity can be created in the individual by making him go through the experience of which he is most afraid. This active immunity is in the nature of confidence in himself.

It will be seen, therefore, that it is comparatively easy to understand and to treat a Freudian neurosis or a traumatic anxiety state because, as a general rule, these are not accompanied by a previous disorder of personality. But these two clinical forms are distinctly uncommon and we are faced with the majority of cases which have an inherent tender-mindedness complicating the existing disorder. The difficulty lies in understanding what the writer has called a 'tender-mindedness,' whence it arises, and whether it can be eradicated.

The type of individual with whom we are dealing is not, as might be supposed, one who simply lacks the courage to face any difficulties and trials which he may meet. He is a person rather who is being courageous all the time if he is to live at all, who is using all his store of courage in order to behave in the normal way. Fear and apprehension are his constant companions and sit grimly and sardonically before him all his waking hours. If anyone doubts this let him take a neurotic to a gay restaurant and watch him there fighting

his fear. One might say that he often gives way to his fear and avoids it, but one has to consider that it is often sheer exhaustion that makes him give in, for one cannot fight fear for years without being defeated many times. Preoccupied as he is, to this extent the neurotic is not a social being; he is not an interesting companion. He is gloomy and morose, pessimistic and sad, but if one can only get to his underlying qualities one will find that he is usually a likeable fellow. If a neurotic is lucky enough to be cured he will be found to be a man who is cheerful, undisturbed by petty troubles and annoyances, modest and courageous and understanding. Granted that he may no longer have the carefree air of a child, his enjoyment of the simple pleasures of life is real enough. In dealing with the neurotic, therefore, one must understand that such a personality may be underneath his present preoccupation.

Hypochondriasis.

The neurotic is apt to be hypochondriacal only to the extent of choosing diseases, aches and pains which he is fairly convinced have no serious significance. That is, he would like to have a disease which is painless, not dangerous, and yet which incapacitates him for normal life. And therefore, in contrast to the true hypochondriac, he is not really disturbed by his symptoms. But let a doctor or one with authority tell him that he is suffering from a disease and he will be seriously disturbed. Miss A. told the writer that she had a sore throat—one of the usual sore throats which she developed every week. The writer suggested that she had septic tonsils, and she turned pale. Her sore throat disappeared and has not recurred. Miss H. had been having a cold off and on for some time to the amusement of everyone, for her cold reappeared when asked if it were better and disappeared again when she had forgotten it. The writer took it seriously and told her what treatment she should have. That night it disappeared altogether. The writer does not wish to suggest that every neurotic will react in this particular way or that the clearing up of his symptoms is as easy as in these illustrations. He merely wishes to point out that, carried to extremes as these cases were, the hypochondriasis of the neurotic is less serious to the patient than it would at first appear. It is as if he feels himself ill, as indeed he is, and being unable to conceive of illness without symptoms creates a few harmless ones. Physicians who have treated neurotics will realise that a patient may come to them suffering from symptoms A. B. and C. But even though the physician is successful in removing all three symptoms the patient will be no whit the better, and feeling no better will promptly invent symptoms D. E. and F, and so on until the real cause of his illness, which itself may be symptomless, is discovered and removed.

In consequence of this, perhaps, the neurotic is rather scared of real symptoms even when he sees them in others. Thus if a patient new to the neurotic society or more seriously neurotic than usual betrays a serious symptom everyone looks dismayed and the unfortunate is shown that he must

never lose control of himself to that extent again. Two ladies had been pouring into the ears of the writer all the popular symptoms. Miss M., a third lady present, said that she could not understand bridge owing to her mental incapacity to follow the game. The two ladies soon masterfully settled her difficulty. It was obvious that Miss M. was as much at sea as before but she did not dare to confess it. She mentioned serious delusions she had with regard to food. "Don't be silly, Miss M.," one of them snapped with such severity that it is doubtful whether Miss M. will confess to a delusion again.

A word might be said here with regard to the neurotic's attitude to illness and treatment. The neurotic has good insight with regard to his illness; indeed he tends to exaggerate it to the point of malingering. One finds oneself thinking that they are not nearly so ill as they make out, whereas the psychotic is always trying to disguise and hide his illness. The former also has no desire to leave the hospital, whereas the latter is insistent and unwearying in his plea to be allowed home.

With regard to treatment one feels disappointed in its results. Psychiatrists have long known that the success of their present mode of treatment depends largely on the patient himself. The most dramatic successes occur with patients of good education and mental stamina. The more capable the patient is of understanding the treatment the quicker and more lasting will be the cure. Now the neurotic in general is an individual of somewhat simple mind and little real education and it is in this large class that the difficulties and failures occur. One can imagine the difficulty of explaining, for instance, the theory of emotional reaction or conditioned reflex to a person of little education or small mind. Time and again the writer has seen the lack of grasp of even the simplest principles. For instance he has heard patients who had been treated for six months discuss whether dreams "came true" in the same way as do those who have never heard of the subconscious or dream analysis. It makes one think that the method of treatment is above their heads and that their doctor's patient labours have been mostly in vain with this type of patient. If they did understand it they would surely discuss it and yet the writer has never heard the subject mentioned.

Fear of Insanity.

Again, the following incident will illustrate the neurotic's fear of insanity. Several patients who were riding in a 'bus passed another patient walking along the village street. They waved and called greetings but she refused to recognise them, because, as she explained quite openly afterwards, she did not wish to be labelled as a Cassel Hospital patient. This incident was told as a creamy jest and was received with great joy. But to the other patients the humour of it lay not in her petty snobbishness but in the fact that she considered it possible that Cassel patients could be recognised by the villagers. The incident shows how insistent is the fear that they were becoming different from other people, that they might become insane, that they were already a little mad.

Physicians who have to deal with this class of people will agree that the fear of insanity is present in the majority of their cases and that it is difficult to persuade them that there is no foundation for their fear.

THE NEUROTIC IN HIS EMOTIONAL LIFE.

(1) *The Fixation of Affection.*

The subject of fixation of affection is an interesting one and much has been written on it by Freud and his followers. Interest has naturally settled round the fixation of affection on the physician and the subject of transference and in consequence there has been a tendency to forget that the neurotic has other fixations of affections. For he is so constituted that he must have someone on whom he can lavish a wealth of affection and adulation, and from whom he can draw the strength to live which he so badly needs. This attitude of mind is easily understood if we consider his mental condition. Indeed one might go as far as to say that the tendency towards fixation of affection is one of the primary symptoms of a neurosis. For here we have an individual who finds life too hard for him, and it matters little whether this is a temporary attitude or a life-long one. Place him in what society you will and he will look around for someone on whom he can cast the burden of his living. From that rather unfortunate individual he draws the fancied or real encouragement and incentive which will carry him over difficulties which he could not surmount alone. And this capability of deriving help from a sometimes unconscious source is often the salvation of the neurotic, for without it it is possible that he would be driven to a more serious mental condition or to suicide. Digitalis is given to a patient suffering from pneumonia not because it will have any specific effect on the course of the disease, but in the hope that it will strengthen his heart sufficiently to meet the exhausting demands made upon it. The fixation of affection has a similar action in the case of the neurotic; it gives his mind the added strength which will enable him to meet the now greater difficulties which crowd upon it. That is its mode of action, but it is difficult to say what this strength is which the neurotic derives from the object of his fixation. If the object be his physician or a sympathetic and wise friend it can be imagined that he will derive benefit in the nature of "therapeutic" talks, but if the object is no one in particular and unsympathetic to boot, wherein does he derive strength? Yet undoubtedly he does. Again, some writers speak about the fixation of affection as something which is difficult for the physician to accomplish. That has not been the writer's experience—a kind word, a look or even a failure to be absolutely rude and there is the fixation: no power will lessen its weight: it remains unashamed and vaunting, immovable, and always pathetic like the simple and trusting devotion seen in a child's eyes.

Freud has reached the conclusion that such a fixation is sexual, but the writer can find but little evidence for such an assertion. The sexual instinct,

one of the strongest primitive instincts of modern life, undoubtedly plays a large part in the causation of neurosis, and the patient himself may often regard his fixation in a purely sexual light ; but beyond that the fixation, as it were, shows no symptoms of being sexual. The attitude of the neurotic to the object of his fixation is one of devotion and worship, rather than of the hungry and blind love which is unmistakably sexual. It is the dumb devotion of a dog who sees in his master the meaning of life ; it is the unquestioning and dependent love of a child for its parents who sees in them only perfection and omnipotence. It may be noted further that the neurotic fixation is made without regard to the sex of the object ; that is, it matters not whether the object of the fixation be of the same sex or the opposite, except in the manner in which the patient himself will regard it (i.e., if the object of the fixation be of the opposite sex the patient will regard it as sexual ; if of the same sex he will regard it more as mere admiration and respect), which seems to point to an essential difference between this fixation and purely sexual affection. The enthusiastic Freudian will postulate the homosexuality of a fixation on an object of the same sex but again it can be said that a purely homosexual love would differ radically from a fixation of affection. The most convincing argument against the sexuality of a fixation is the asexuality of the neurotic.

The lack of sex appeal, sex attraction and interest in things sexual is an impression characteristic of the neurotic crowd. Out of 65 patients at the Cassel Hospital only one could have been said to possess definite sex appeal and that one patient was an early psychotic. There is no coquetry in the eyes of the women, and the men would be dubbed by the normal girl as a "dull crowd." Although there is opportunity for the development of minor *affaires d'amour* they are hardly ever thought of and never occur. Although patients' rooms are all over the house without regard to sex no pregnancy has ever occurred. There is no flirtation, and even cheerful badinage is nearly unknown. Couples wander about, dance together and talk intimately by the hour, but their attitude towards each other has no glimmer of sex in it. Their conversation is castrated and their love is the love of lay figures. Yet characteristically they do not consider their attitude to each other as abnormal. They may consider themselves much in love and may even look forward to marriage. But to the onlooker it is at once pathetic and impossible.

Nor is it surprising that the neurotic should be so asexual when we consider the preoccupation in which he lives. Their minds are never given over to work, conversation or life's normal activities. One cannot imagine the normal man making love with zest if he suspects, let us say, that he has just drunk a glass of poisoned wine, nor does one expect a timid sailor to have a strong libido, no matter the provocation, while crossing the Channel in a stiff gale and wondering when he is going to be sick. No less insistent and ever present is the preoccupation of the neurotic ; his mental state may be enough to check even insistent libido.

(2) *Sense of Humour.*

The neurotic crowd cannot in any sense of the word be called a happy crowd, and when one considers the mental agony to which they are prone it is not to be wondered at, because the neurotic, no matter how ridiculous it may seem, goes through the torture of a lost soul. One has only to live with them for a short time to realise that. In consequence, therefore, it is difficult to find examples of neurotic humour. There are, of course, individual flashes of clever wit, but as a rule it is short-lived. As a rule their humour is somewhat crude and infantile, as the following example will show.

For a bet of eighteenpence a rather wealthy young man swallowed a fat and healthy garden worm. His action and motive were surprising as he professed that he did it to see his friends look disgusted and sick. From his point of view the joke was a success, for his action was greeted by some with incredulity as if indeed it were too horrible to be true, and by others with such disgust that they had to leave the room. The perpetrator of the joke enjoyed all this and offered to swallow any other invertebrate or insect at various prices.

The next example will show the difference in mental age of humour between the neurotic and the normal individual.

The writer was coming in from a short walk one evening and met a patient with a member of the staff. The patient asked how far he had walked ; " Oh ! about fifteen miles," he replied, jocularly. " You must be a splendid walker to do that in two hours," the patient said, with wonder and complete belief. The member of staff laughed and called the writer a liar.

CONCLUSIONS.

Our conclusions may now be briefly summarised.

I.—The Neurotic as a Social Entity.

(*a*) His attitude towards the normal individual is tinged with jealousy because, consciously or not, he feels himself inferior. He is also anxious that he should be, outwardly at least, as like the normal as possible because he is hypersensitive to criticism and ridicule.

(*b*) His attitude towards other neurotics is kindly and sympathetic. They create for each other a society easy to live in, a society in which there is a minimum of conflict, because their experience of normal society has been painful ; and, feeling that they are not fit for another such society, they create one in which the painful elements are eliminated.

(*c*) In conversation also the neurotic misses out things which to him are unpleasant. His conversation therefore tends to be simple and displays childlike lack of guile. He talks of himself in a way which lacks the reticence of the normal individual.

(*d*) His physical attitude and activities are characterised by a subtle lack of *élan vital*, which is not a true introversion but a result of his preoccupation in his phobias.

(*e*) The neurotic's contact with reality is impaired only in that (1) he lacks the robustness, mentally and physically, to be in contact with the world around

him for very long at a time ; and that (2) he never quite loses sight of his fears and obsessions. This gives him an air of preoccupation and a fear of actively taking part in normal life.

(*f*) Work, frankly, is distasteful to the neurotic. It is often to him his greatest fear because the memory of his occupation or profession is usually an unpleasant one. He may and often does admire work and those who are capable of working but he feels that it is beyond his capabilities and avoids it ingenuously. When compelled to occupy himself in some way the neurotic chooses childlike and primitive occupations. Thus simple art crafts and occupations like wood-cutting are fairly popular. It seems that as a class neurotics tend to retrogress into a childlike state, physically and mentally. The purpose of this retrogression is to be able to take advantage of the privileges of a child and still retain the advantages of being grown up. The change is a purely defensive one.

II.—The Neurotic as an Individual.

(*a*) The neurotic should be regarded as an individual who has a hyper-sensitiveness of affect, who is 'tender-minded.' The neurotic has no natural immunity to emotional upset.

(*b*) It is generally supposed that all neurotics are hypochondriacal. The writer has found that neurotics are not very serious about the diseases which they imagine they suffer from. Firstly, they imagine that they suffer from diseases which they are not likely to have, and secondly, they are ready to change the disease at the slightest suggestion. They feel themselves ill and by a process of conscious rationalisation they attach their feelings of illness to a disease or diseases. But none the less they would be disturbed if told on good authority that they had that particular disease, because they are frightened of real disease.

(*c*) The fear of insanity is a constant symptom. They are apprehensive that other people will notice that they differ from the normal in word or behaviour.

III.—The Neurotic in His Emotional Life.

(*a*) *The Fixation of Affection.*

So important a characteristic is the fixation of affection that the writer regards it as one of the primary symptoms of a neurosis. The neurotic is so constituted that he must have someone to fix his affections on and from whom he can draw the incentive and strength to go on living. It is not in the nature of a sexual affection, though it may be regarded by the patient as such. Rather it is devotion and admiration and shows none of the characteristics of a sexual love. The true neurotic, also, is almost incapable of sexual love, as such, because of his striking asexuality. This can be understood when we consider the preoccupation of the neurotic.

(*b*) *Sense of Humour.*

As the neurotic cannot be called a very happy person, his sense of humour is limited. Individual flashes of humour may be brilliant but they are usually short-lived. His humour is in the main crude and infantile.

Critical Review.

POSTENCEPHALITIC PARKINSONISM AS A CHRONIC INFECTION.

By T. R. HILL, London.

ACTIVE INFECTION IN PARKINSONISM.

Some well recognised features of postencephalitic Parkinsonism are of such a nature as to suggest to the clinician a chronicity of the infection in the brain. Among such features are (1) the gradual appearance and often steady progression of the syndrome many months or several years after an acute encephalitic attack, the patient having, perhaps, been quite well in the interim; (2) the insidious development of the syndrome with no history of an acute attack (i.e., the infection being chronic from the first); (3) a certain amount of evidence of contagion long after the commencement of the illness; (4) the appearance and variable course in Parkinsonism of other encephalitic signs and symptoms; (5) the occasional recurrence of the disease in an acute form, perhaps months after the first attack. From the point of view of treatment it is important to deal with this question of active infection. Is it definitely shown that in some, or many, cases, the virus is still active? Can those that are definitely still infected be discriminated from those where the symptoms are truly 'residua'? What is known of the virus and can specific measures be used against it? If not, what results would successful non-specific treatment bring? It is proposed in this review to discuss some of the evidence for and against the view that chronic infection may persist in Parkinsonism and to attempt to answer the above questions.

THE PRESENCE OF CHRONIC INFECTION.

The balance of the evidence and opinions put forward by large numbers of workers is overwhelmingly in favour of a persistence of the infection in many cases of 'post'-encephalitic Parkinsonism. Yet examination of all this work shows that the activity is very low-grade and probably often dies out completely.

Von Economo himself first described a chronic type of case progressing by stages or 'shoves.' Nonne found that there might be an interval of from three to four years' freedom from symptoms between an acute attack and the appearance of sequelæ, e.g., the Parkinsonian syndrome: and a latent period like this of as long as four or five years has frequently been noticed since. Wimmer, commenting on this interval, regards the postulation of a persistent infection in the brain as the best explanation and compares chronic

encephalitis with neurosyphilis, where immunity and activity go hand in hand. However, Ivy Mackenzie is not convinced that insidious development of Parkinsonism is due to extension of the lesions through persistent infection, but regards the appearance of the syndrome as due to a gradual process of functional adaptation of diseased areas of the brain to their altered state. It is difficult to find any convincing physiological support for this theory. Suggestions (Stern, Mourge) have been made that the virus might cause metabolic changes, the effects of the latter producing, with the passage of time, lesions in the basal ganglia, etc. Thus Mourge compared epidemic encephalitis with the encephalitic changes occurring in animals after removing the liver from the circulation by production of an Eck's fistula. Doubtless these suggestions were born in an attempt to find an analogy with progressive lenticular degeneration. They were supported by the finding by the same workers of some signs of liver failure in epidemic encephalitis, e.g., glycosuria, urobilinuria, and impaired lævulose tolerance. There has been no general confirmation of this finding, and to prefer these alternative suggestions to that of a persistent extending infection is to become still more hypothetical.

Post-mortem evidence (regarded by most authorities as conclusive) of active infection in the brain in long-standing cases, including those of Parkinsonism, has been found. Hohman said that a striking feature in his cases was the universal finding of persistent signs of acute and subacute inflammatory reaction, even after months or years of the disease. He found definite areas (" sometimes difficult to detect, but always present ") of round-cell infiltration, with plasma-cells and lymphocytes. McAlpine said (1923) that he and many other observers had discovered signs of active disease post-mortem in Parkinsonism, these signs being the presence of inflammatory cellular exudates. Freeman noticed (1) the presence of fat in scavenger cells and (2) collections of small lymphocytes within the sheaths of blood-vessels, and compared the picture with that of general paralysis of the insane, where it means " unequivocally persistent inflammation." Greenfield states that slight cuffing of vessels and small infectious nodules may be found in the most affected areas of the brain. He emphasises the fact that although they have been accepted as signs of persistent infection they are not the most prominent post-mortem feature, which is neuronal decay. He admits the evidence that the virus may linger on in some cases for months or years " in a virulent form " and produce the slowly progressive cases, but thinks that in most the virus dies out completely in a few weeks after the acute attack.

DISCRIMINATION OF CASES WITH ACTIVE CHRONIC INFECTION.

On the above arguments active infection should be regarded as being present if the case at the time of observation is progressive. Thus if a case of Parkinsonism begins by insidiously developing the mask-like facies and some general poverty of movement and if this becomes gradually more pronounced and extrapyramidal rigidity with Parkinsonian posture is slowly

superadded, then during the time that this process is at work active infection is present. However, between an acute attack of encephalitis and the onset of Parkinsonism, a period of up to four or five years may elapse during which the patient may remain perfectly well. All this time the infection is lying dormant and there is nothing that reveals its presence. There is no metabolic change or alteration in the blood-picture or cerebrospinal fluid whereby it may be demonstrated. Therefore, every patient who has once had an attack, with either an acute or an insidious onset, of epidemic encephalitis should be regarded as a case of active disease for several years to follow, and any treatment of the infection that is possible is indicated during this period.

THE VIRUS.

The early attempts of Loewy and Strauss, and Kling, to transmit the virus of encephalitis to animals are to be discounted. The work of Loewy and Strauss and Kling is largely deprived of its value by the discovery by McCartney of the occurrence among stock experimental rabbits in America of an encephalitis due to a parasite—the *encephalitozoon cuniculi*—which may produce in the animal, without giving rise to symptoms, microscopical appearances identical with those described by the former workers and alleged by the latter to have been produced by the encephalitic virus. McCartney found this spontaneous encephalitis of rabbits in 50 per cent. of 372 animals whose brains he cut. This corresponds exactly with the percentage of successful transmissions of epidemic encephalitis claimed by Kling. Also, Kling's rabbits did not develop any symptoms of encephalitis but were killed some time, e.g., two months, after having been inoculated with infective material and their brains examined microscopically. Such evidence of transmission of encephalitic virus is ambiguous and unsatisfactory. One point in Kling's favour is that he could not find evidence of parasitic encephalitis among his stock rabbits. Also, McIntosh has recently said that the spontaneous encephalitis of rabbits is distinguishable microscopically from a true transmission of the epidemic encephalitic virus. He is convinced that the latter has been produced and that in it the perivascular cellular exudate is predominantly lymphocytic, whilst in the former it is granulomatous, i.e., composed of endothelial cells. Flexner's criticisms of the early work on the virus may be quoted, and, even if successful transmissions were obtained, the latter tell us nothing of the nature of the virus. An early attempt at cultivation of the latter as visible globoid bodies was shown to be without value.

Flexner, writing in 1920, stated that his efforts to obtain positive transmission of the virus to animals failed completely. He was unable to repeat the successes claimed by Loewy and Strauss. He said that nothing consistent came of the work on monkeys and that only a very few positive results were reported. McIntosh's positive result after keeping his infective material in glycerol for fourteen days, was described as problematical. Criticism was also directed against Levaditi's claims of successful transmission, and against his

views on the nature of the virus. Levaditi succeeded in transmitting to a rabbit a virus that could be passed from animal to animal, and which resembled in its action the virus of herpes febrilis. Both viruses when inoculated intracerebrally, or on the scarified cornea, produced a fatal encephalitis with symptoms. Rabbits could be immunised against either virus by dermal injection and immunity to one virus protected against the other. Much further work has been done on the relation of these two viruses and will be described below. Flexner's criticism was that the so-called encephalitic virus that Levaditi obtained was actually herpes virus itself, an accidental contamination, for the original case from which Levaditi obtained a transmissible virus was suffering from herpes labialis at the time of death and later 'successful' transmissions were obtained, in a number of instances, from nasopharyngeal washings where the herpes virus is common. In addition, the likelihood of accidental transmission is increased by the fact that Levaditi only obtained one positive result in thirty experiments. Flexner also obtained the virus of herpes from the cerebrospinal fluid of a case of neurosyphilis, showing, therefore, that it may be present in the cerebrospinal fluid in other than cases of epidemic encephalitis.

However, since this date, much further work has been done on the viruses of herpes and epidemic encephalitis, and on their relationship, which goes some way towards answering the above criticisms. Before this is dealt with, some of the work, not generally confirmed, on the nature of the encephalitic virus will be mentioned. Freeman isolated from the brains of fatal cases a small diplostreptococcus in curved chains and accompanied by minute filter-passing bodies and large coccoid bodies. He states that intravenous injection of these organisms into rabbits produces a tendency to localisation of the subsequent infection in the brain. The animals show neurological signs, e.g., paralysis, forced movements, rigidity and inco-ordination. Post-mortem examinations showed an acute or subacute meningoencephalitis with no specific signs of inflammation outside the central nervous system. His virus was transmissible from animal to animal and gave similar findings on intracerebral inoculation into monkeys. Rosenow has prepared an antiserum to this organism from horses and reported good results in treatment of acute cases. This antiserum might be experimented with in any future epidemics of encephalitis and its effects on chronic cases tried. Similar unconfirmed work has been done by Crofton. He stated that in all of eight cases of acute encephalitis the influenza bacillus had been found, and that he had obtained curative results in acute encephalitis by the use of a pure influenza antigen. Other observers have reported good results in treatment by pure influenza antigen (Keith) and also have found the influenza bacillus present in fatal cases, e.g., in the spleen. The relationship between influenza and encephalitis has, of course, been widely discussed and the general view is that they are unrelated. Nevertheless an antigen of Pfeiffer's bacillus can be experimented with and its results, if any, estimated.

On account of the general confirmation that it has received and the large scale on which it has been carried out, the more recent work on the relation of herpes febrilis to epidemic encephalitis is of much interest and importance. The chief advance in this field is due to the work of Perdrau. His findings and conclusions, and also those of other recent workers in this field, will be discussed.

Levaditi, and all observers since, agree on the extreme difficulty of transmitting the virus of encephalitis, even by intracerebral injection of infective brain-pulp from a fatal acute human case, to animals. However, when an apparent transmission has been obtained the virus can be passed in rabbits from animal to animal by appropriate intracerebral inoculation.

Those who considered that they had successfully transmitted the encephalitis virus showed that it was possible to immunise rabbits against it; they compared the encephalitis produced by this virus in rabbits with the encephalitis produced by inoculation of the virus of herpes febrilis; they demonstrated the essential clinical and pathological similarity of the two conditions and the fact that the virus of one immunised the animal against the virus of the other. They concluded that the virus of epidemic encephalitis was closely related to that of herpes febrilis and, also, that the virus of epidemic encephalitis had a greater tendency to localise in the central nervous system and that of herpes to localise in the skin. Their further conclusions on these viruses will be mentioned later. The criticism was that the successful transmissions claimed, few in number, were actually transmissions of the herpes virus itself owing to contamination or previous presence of the latter. Also, the tendency of epidemic encephalitis to localise in the central nervous system of animals and of herpes to localise in the skin was said not to represent differences beyond the variations capable of occurring in different strains of the virus of herpes alone. The importance of Perdrau's work is that it shows the reasons why it was that apparently successful transmissions of the encephalitic virus from infected human brain or cerebrospinal fluid were few and far between. By his methods he obtained a high percentage of successful results, in this way rendering unlikely the possibility of mistaking a transmission of the herpetic virus for one of the encephalitic. Thus he produced in rabbits a typical encephalitis with symptoms from each of the brains of three fatal human cases.

He began by examining his stock rabbits for signs of the spontaneous encephalitis found by McCartney in America, and found in the brains of 250 rabbits, and also in a review of past material, no evidence of this disease in this country. Thus he was able to avoid the ambiguous results that the presence of the parasitic disease would have produced. Perdrau followed the example of McIntosh and kept his infective human brains from two to three weeks in glycerin before inoculating rabbits with them. Such brains, which gave negative results when fresh, produced after such treatment a fulminating encephalitis fatal to the rabbits in four days. Perdrau suggested that immune bodies were present in the human brains, together with the virus, and that

prolonged glycerinisation destroyed the former and not the latter. He suggested this as an explanation of why fresh pulp from brains of human encephalitic patients frequently gave negative results on injection into the brain of an experimental rabbit. He also produced successful transmission of the encephalitic virus by inoculating rabbits intracerebrally with infective material during the negative phase of the development of an immunity. He did this by giving on four successive days, first, two intradermal injections of material, and then two intracerebrally. He found that it took eleven days for immunity to be established following intradermal injection of infective material.

Perdrau succeeded in transmitting a virus of less virulence from a subacute human case and produced in rabbits a subacute encephalitis quite different in symptoms from the usual herpetic encephalitis. If, however, a rabbit was immunised (by intradermal injection) to herpes febrilis and then if it received an intracerebral injection of herpes virus as the immunity was passing off, a subacute herpetic encephalitis resulted which was symptomatically and pathologically identical with the former type. In addition, the brains of the animals that suffered from these two forms of subacute encephalitis both yielded a non-transmissible virus. Perdrau's conclusions are as follows.

In epidemic encephalitis there may be :

(1) Development of a local cellular imunity which overcomes the infective agent and leads to complete recovery.

(2) Development of a state of local cellular immunity which partially overcomes the infection, the final issue being a fatal one or a chronic infection.

(3) Failure of development of any immunity and a quickly fatal result.

Theoretically, the virus in the brains of class (3) above would be readily transmissible, but the majority of the cases were of type (2) and material from them would be either completely non-infective or might produce a subacute encephalitis (as above), from which no further active virus could be obtained. If, however, it were freed from immune bodies by prolonged glycerinization, or if its virulence were otherwise increased (by other methods devised by Perdrau), such material might produce a typical encephalitis transmissible to rabbits. Experiments with herpes show that immunity to a weak virus is transient compared with that to a strong virus. "Thus it seems likely that invasion of the human brain by a comparatively non-virulent virus might produce a spreading low-grade infection, attacking cells of least resistance." Perdrau suggests that certain cell-groups, e.g., the cells of the substantia nigra, are less resistant than others. Thus would be explained the progressive character of cases with slight initial symptoms.

In support of his work, Perdrau suggests that herpetic contamination cannot be urged against all workers (Wimmer also mentioned the unlikelihood of many experienced workers being deceived) and adds that the long-lasting differences in dermatropism and neurotropism of herpetic and epidemic

encephalitic viruses that he possesses makes it possible that the two are related but not identical. He describes a case of herpetic infection of the forefinger which lasted for two or more years, during which time the patient showed, intermittently, signs of mild encephalitis.

Greenfield points out that human immunity to herpes is notoriously slight, being essentially a tissue and not a humoral immunity. This accounts for the outbreak of herpes produced by Levaditi in a patient with acute epidemic encephalitis, in whom he injected intrathecally the virus of herpes. Terssier, Marinesco and others, report that patients who have had an attack of epidemic encephalitis are less immune to herpes than others. This point is of interest in connection with Wimmer's view that immunity is very late in developing in human beings with encephalitis ; for example, Levaditi destroyed his virus in vitro with serum from a seventeen months' old case, but found that that from a five months' old case was ineffective.

A suggestion, developed at length by Levaditi, has been made, that there is a whole group of infections that attack only tissues of ectodermal origin, i.e., the skin and central nervous system. He has suggested the following as members of such a group—the " ectodermic neurotropes "—the differences in their symptoms being due to the tissue of predilection, either the central nervous system or the skin : rabies, smallpox, acute poliomyelitis, chickenpox, mumps, foot-and-mouth disease, and the " Bornasche Krankheit " of horses. Poincloux has classified some of these diseases in descending order of neurotropism : poliomyelitis, rabies, epidemic encephalitis, herpes febrilis and vaccinia. The occasional encephalitic complications of varicella and mumps are well recognised.

As a result of further work, Perdrau arrived at the following conclusions :

(1) Herpes febrilis is caused by a living virus, having a semi-saprophytic existence on the mucous membranes of most persons. It is mildly pathogenic to man and is probably responsible for some cases of herpes zoster, by a local invasion of the central nervous system.

(2) A different strain of herpes virus, very pathogenic to man, is the causative agent of epidemic encephalitis.

Doerr (1924) has summed up the arguments for and against the relationship of herpes febrilis and epidemic encephalitis.

For relationship :

(1) Numerous workers have recovered a virus from the cerebrospinal fluid or brain in cases of epidemic encephalitis, which acts like herpes febrilis virus when inoculated into rabbits. Differences in dermatropism and neurotropism of the two are not greater than may be observed between different strains of herpes febrilis virus (but see Perdrau's conclusion above).

(2) Herpes virus may cause lesions and clinical pictures in animals much like those of epidemic encephalitis in man.

(3) Herpes virus in animal experiments tends to travel from the portal of entry along nerves to the central nervous system.
(4) Epidemic encephalitis is an infectious disease and no other causative agent has been found.

Against relationship :

(1) Herpes febrilis is common. Epidemic encephalitis is rare.
(2) The occurrence of epidemic encephalitis is not accompanied by an increase in incidence or severity of herpes.
(3) A conclusive example of encephalitis as a sequel of labial or corneal herpes is not known in man (but see case quoted above).
(4) Encephalitis is not produced in man even by intrathecal injection of herpes virus.
(5) Herpes is rare in epidemic encephalitis compared with pneumonia or meningococcal meningitis.
(6) Herpes has been found in only a small number of cases of epidemic encephalitis where it has been specially sought for (two out of 41 cases—Levaditi).

These pros and cons may be judged in the light of the work detailed above. Many critics of this work are convinced that epidemic encephalitis is a 'new disease' altogether. Presumably they postulate a 'new' organism. Is it likely that some 'new' pathogenic organism could suddenly be created? It is more probable that the causative organism of epidemic encephalitis is a variant of some other organism, e.g., of the virus of herpes, or possibly, of some organism previously non-pathogenic.

The workers on the viruses of herpes febrilis and epidemic encephalitis and their relationship regard both as being filter-passing and, otherwise, of an unknown nature. Arguing from analogy with other epidemic diseases of the central nervous system, e.g., acute anterior poliomyelitis and cerebrospinal meningitis, it is very probable that the nasopharynx harbours the organism and that carriers of the latter may exist. Crafts reports a striking example suggesting the infectivity of buccal or pharyngeal secretion. Three soldiers lay in bed, side by side, the one in the middle bed having suffered from epidemic encephalitis. They were in the habit of passing a cigarette from mouth to mouth. The other two soldiers developed the disease. Some cases begin their acute attack with severe gastrointestinal symptoms. Here the alimentary canal may be the portal of entry.

Flexner (1928) continues his criticism of the theory of a relationship between herpes febrilis and epidemic encephalitis; he still considers that it has not been successfully transmitted to experimental animals and that nothing is known of the virus. He has, however, obviously overlooked Perdrau's work, as he still states that there are only six examples of alleged successful transmission of the encephalitic virus to animals reported in the literature.

CONTAGION.

There is an absence of evidence of obvious contagion in this disease. Most of the definite examples show that the contagion occurred during an acute attack, during either the initial or a recrudescent one. There is negligible evidence of contagion in the chronic stage. Parsons, from an examination of the records of 1,273 cases, of all types, finds 32 of possible contagion, and Netter from 174 finds eight. Together this gives a percentage of 2·5 (Hall).

CONCLUSION.

In conclusion it may be said that the present position of our knowledge of the virus of epidemic encephalitis is not a hopeless one, and that in the event of more epidemics the results so far obtained afford an excellent starting place for further advance. What knowledge of the virus has so far been gained is useless in affording means of experiment in specific treatment (owing to the transient nature of human immunity to herpes), unless the views of Crofton and Rosenow are taken as a basis. The balance of evidence must be regarded as being conclusive of a persistence of infection in the central nervous system in some cases of Parkinsonism. The only means of detecting this is by observing clinical signs of progress of the disease. The evidence makes it certain that active infection may be present for a considerable length of time before any signs of progress occur. It is, therefore, advisable to treat all cases of epidemic encephalitis, including those of Parkinsonism, for some years at least after onset, as cases of active infection in the central nervous system. This can only be carried out, with the generally unconfirmed exceptions mentioned above, by non-specific means. The durable nature of the Parkinsonian syndrome once it has appeared, and the destructive signs found in the substantia nigra, indicate that the signs and symptoms at any moment must be regarded as being almost wholly due to neuronal destruction and that no remission of them can be expected from non-specific (or specific) treatment of the active infection, even if it were successful. The most to be hoped for is inhibition of the progression.

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Editorial.

INTRACRANIAL HYPERTENSION.

OUR knowledge of intracranial hypertension has been greatly increased in the last few years both by the application of instruments of precision to its diagnosis and by attempts to clear up certain debated points in its etiology. Owing to the general use of a manometer in lumbar punctures we have a fairly accurate knowledge of the normal pressure of the cerebrospinal fluid within the cranium and, in consequence, can say with some degree of certainty when the intracranial pressure is increased. The border line between normal and increased pressure is put by most observers at 200 mm. of water in the horizontal position. It has been observed, for example, that cases of cerebral tumour begin to show evidence of increased intracranial pressure soon after this level is passed. It is true that the diagnosis of cerebral tumour may be made in the absence of any increase in cerebrospinal fluid pressure when evidences of a focal lesion make their appearance in a progressive manner. But such cases present none of the three cardinal signs of cerebral tumour, viz.: headache, vomiting or papill-œdema. The degree of pressure at which these signs appear cannot be stated with certainty as other factors than pressure play some part in them, but when the pressure is below 250 mm. it is unusual to find papillœdema, and headache and vomiting are not usually prominent symptons. Nor are pressures of this order dangerous to life. In fact the pressure must probably go beyond 300 mm. before it threatens life directly.

Another instrument which is probably of considerable value in estimating intracranial pressure in a more indirect manner is Bailliart's[1] ophthalmodynamometer. With it a comparison is made of the pressure in the arteries of the retina and in the brachial artery, and an indication is thereby obtained of the pressure in the smaller arteries inside the cranium. This instrument, although less accurate than the manometric lumbar puncture needle, is free from the risks attendant on tapping the subarachnoid space in cases of intracranial hypertension. There is no doubt that the use of the manometer considerably reduces the risk of lumbar puncture in such cases, but it is well known that sudden alterations of intracranial pressure in cases of cerebral tumour are extremely

[1] *Annales d'ocul.*, 1922, clix, 785.

dangerous. The ophthalmodynamometer is only useful before the onset of papillœdema, for after this has made its appearance the readings obtained become fallacious. It is, therefore, of little use in distinguishing papillœdema from papillitis.

From a combined use of the manometric lumbar puncture needle and the ophthalmodynamometer we may look forward to the solution of certain vexed problems. For example, (1) What is the relationship between hyperpiesis and intracranial hypertension ? and (2) what is the ratio in normal and pathological cases between the arterial pressure inside the skull and cerebrospinal fluid pressure ? Does reduction of pressure round a leaking aneurysm by lumbar puncture or craniotomy increase the leakage, or does it rather reduce the pressure within the bleeding artery, and so favour hæmostasis ? These are questions to which a clear answer is urgently needed.

The etiology of intracranial hypertension appears at first to be self-evident ; it is clearly due to compression of the contents of the skull by the growth of a tumour, or by an increase in the amount of cerebrospinal fluid within it. But a glance below the surface shows us that the problem is less simple than that. For since blood is constantly passing in and out of the cranium the increase of pressure must be largely dependent on the blood. It has also been shown that the intracranial tension found in cases of cerebral tumour depends more on the amount of cerebrospinal fluid than on the size of the tumour. It is well known that a small tumour may raise intracranial pressure much more than a large one if it is so situated as to cause hydrocephalus, but it is perhaps less generally realised that practically every case of cerebral tumour is associated with some degree of hydrocephalus. The first problem that arises, therefore, is : Why does cerebrospinal fluid continue to be formed when its formation is harmful to the balance of physical forces within the cranium ? If, as is now generally held, the cerebrospinal fluid is dialysed from the blood capillaries as through a semi-permeable membrane, why does the increase of pressure of the fluid side not abolish the formation of fluid from the blood ? The answer appears to be that, unless grave anæmia is to ensue, the capillary pressure must be kept above the general intracranial pressure. Consquently the formation of cerebrospinal fluid must continue so long as the patient is alive. Other factors contribute to the vicious circle thus begun. An analysis of these has recently been made by Stopford,[1] who

[1] *Brain*, 1928, li, 485.

has emphasised the importance of one, viz., that the great vein of Galen may be kinked by any unilateral or general raising of the tentorium cerebelli. When a tumour grows in the posterior half of the cerebral hemispheres it will push the posterior end of the falx to one side and thus tug the tentorium upwards, whereas a tumour in the posterior cranial fossa will push the tentorium up from below. A kink is thus formed in the vein near its entry into the straight sinus and the obstruction thus caused leads to an increased formation of cerebrospinal fluid by that choroid plexus which is drained by the affected vein. Russell Brain[1] found that tumours of the frontal lobes were not so likely to cause symptoms of increased intracranial pressure as those elsewhere, and Stopford accepts this as in favour of his hypothesis.

But an increased formation of cerebrospinal fluid would of itself matter little if the fluid could be absorbed as rapidly as it was produced. Many factors combine to prevent this. The tumour itself may obstruct the foramen of Munro or the third or fourth ventricles or the iter of Sylvius, and so prevent the escape of fluid from the ventricles. This occurs in tumours of the thalamus or brain stem. But a much more common event is that by its bulk the tumour, wherever it lies, reduces the space between the brain and the skull. Convolutions are flattened and sulci obliterated and the fluid is thus unable to pass to the large venous sinuses over the vertex where it is normally absorbed. Another vicious circle now comes in to increase this obstruction. In Dandy's well-known experiment it was proved that unless the fluid can flow freely round the sides of the midbrain through the incisura in the tentorium cerebelli, hydrocephalus rapidly appears. Now it is a commonplace in tumours of the cerebral hemispheres to find that the inner part of the hippocampal gyrus is herniated through this incisura, and this herniation must obstruct the upward flow of fluid past the midbrain.

A similar vicious circle often occurs also in hydrocephalus, for it is known that in the majority of cases there is a free communication between the ventricles and the lumbar subarachnoid space. When this is so the obstruction to the absorption of fluid must lie either at the level of the tentorium cerebelli or above it, and is probably chiefly due, in post-meningitic cases, to infiltration in the region of the cisterna basalis, aided by the obliteration of sulci which results from the ventricular distension.

[1] *Brain*, 1925, xlviii, 105.

Intracranial hypertension may result from injuries to the skull in several different ways. Injuries to the middle meningeal artery, or perhaps more often to the middle meningeal vein, may cause epidural hæmorrhage, coming on rapidly or more slowly according as the artery or the vein is damaged. Still more insidious is the compression which results from laceration of the vertical veins as they pass across the subdural space from the cerebral cortex to the superior longitudinal sinus. The pressure in these veins is probably only very slightly above the general intracranial pressure and consequently bleeding from them into the subdural space probably takes place very slowly and spasmodically. In fact this form of hæmorrhage is rarely seen in healthy young subjects. It is as often bilateral as unilateral, especially when it is caused by a blow on the forehead or the back of the head.

Simple concussion, apart from either fracture of the skull or hæmorrhage, is also always associated with a rise in intracranial pressure, and, as was recently emphasized by Armour,[1] this hypertension may persist for weeks and months and be associated with headaches and dizziness. This condition has often been falsely called 'post-concussion neurosis.' Foerster[2] and Wartenberg[3] have showed by encephalography that in it there is constantly a dilatation of the lateral ventricle or displacement of the ventricle towards the injured side. Penfield,[4] by injecting air into the lumbar canal and by so arranging the patient's position that the air reached the cortical subarachnoid space rather than the ventricles, obtained pictures which suggested local cortical atrophy. All these observers have found that replacing cerebrospinal fluid by air has a remarkable curative effect on the symptoms. Penfield suggests as a possible rationale for this, that arachnoidal adhesions over the injured cortex may be broken down by the movement of the air bubbles. But the curative effects which have often been obtained either by lumbar puncture alone or by local trephining indicate that the symptoms are due rather to some alteration in the circulation and absorption of cerebrospinal fluid. It is probable that some vicious circle of the kind already described is broken by these relatively simple procedures. It is indeed one of the conditions in which empiricism has for the moment outrun scientific knowledge.

[1] *Proc. Roy. Soc. Med.* (Neur. Sect.), 1928, xxii, 11. [2] *Zeits. f. d. g. Neurol. u. Psychiat.*, 1924, xciv, 515. [3] *Arch. f. Psychiat.*, 1926, lxxvii, 507. [4] *Surg. Gyn. and Obst.*, 1927, xlv, 747.

Abstracts.

Neurology.

NEURO-ANATOMY AND NEUROPHYSIOLOGY.

[215] **The phylogenetic development of the substantia gelatinosa Rolandi.**—E. KEENAN. *Kon. Akad. v. Wetensch. t. Amsterdam*, 1928, xxxi, 837.

THE posterior horns of the spinal cord in fishes differ materially from what is found in man. In the latter three areas may be distinguished, viz., body of the posterior horn, substantia gelatinosa Rolandi, and marginal zone of Lissauer; whereas in fishes the cornu is made up chiefly of substantia gelatinosa. That its main function is visceral is probable from the facts (1) that cranially it becomes continuous with the commissural nucleus of the vagus in the medulla, and (2) that fine medullated fibres from the posterior roots can be traced to it.

A comparison of the relations between the body of the posterior horns and the substantia gelatinosa in mammals, and of the corresponding areas in fishes, demonstrates the small size of the body of the horn and the great size of the gelatinous substance in the latter. Thus in the higher animals the substantia gelatinosa loses in relative size. The conclusion from various lines of evidence is that the substance is related to primitive sensation ('protopathic' of Head, 'vital' of Kappers).

S. A. K. W.

[216] **A note concerning the probable function of various afferent end-organs in skeletal muscle.**—J. F. FULTON and J. PI-SUNER. *Amer. Jour. Physiol.*, 1928, lxxxiii, 554.

WHEN an extensor muscle of a decerebrate preparation is placed under slight initial passive stretch, irregular action-currents are detectable in the galvanometer record. If a series of knee-jerks is elicited from a muscle under these circumstances, though large action-currents precede the action-current of each jerk, the irregular vibrations of the tonic muscle are absent during the jerk but reappear in the course of its relaxation. This is interpreted as indicating that during a knee-jerk the adequate stimulus is removed from the stretch afferent end-organ. A discussion is given of the nature of an end-organ which is responsive to passive stretch but unresponsive to tension set up by active contraction. It is argued that such an end-organ must exist in parallel with the tension-yielding elements of the muscle, for if, as is the case with the tendon

organs, it were disposed in series with these elements, no distinction could be drawn between the tension of a passive stretch and that of active contraction. Histologically the most important group of end-organs existing in parallel with the striated muscle fibres are the muscle spindles.

In view of all the evidence, it is concluded that the muscle spindles are the receptors for the knee-jerks and the stretch reflex.

The tendon organs are evidently the tension recorders, and it is also possible they give rise to impulses leading to reflex inhibition of the muscle itself. Whether or not they mediate pain is left an open question.

J. V.

NEUROPATHOLOGY.

[217] **Illuminating gas poisoning : an experimental study of the lesions of the nervous system in acute and chronic stages.** — Armando Ferraro and Raymond Morrison. *Psychiat. Quarterly*, Oct. 1928, 1.

This is a record of a valuable piece of work of considerable interest to the neurologist.

Experimental illuminating gas poisoning in rabbits is followed by diffuse nerve-cell changes throughout the cortex, brainstem, cerebellum and spinal cord. In the early stages the lesions are mainly degenerative in type : the nerve-cells show acute swelling, liquefaction, and lesions of both ischæmic and shrinkage type. Neuroglia reaction accompanies these changes, and microglia and oligodendroglia undergo a process of acute swelling. At a later period the process is one of combined degeneration and inflammation. Areas of softening occur, and microglia reaction leading to the formation of ' gitter-cells ' is plainly visible.

In acute stages the endothelium of the blood vessels is swollen, while in chronic stages a true endarteritic process may be found. The degenerative lesions have no predilection for the corpus striatum as is frequently the case in human pathology, but are evenly distributed in various cortical and central areas. The olfactory system is early affected and among other structures the ganglion habenulæ and corpus mamillare are particularly damaged. Infundibular and hypothalamic structures are seriously involved, also the peripheral nervous system (lesions of anterior horn cells and of both anterior and posterior roots). The pathogenesis of the lesions is complex.

J. V.

[218] **Intracranial tumours among mental hospital patients.**—Leo M. Davidoff and Armando Ferraro. *Amer. Jour. Psychiat.*, 1929, viii, 599.

The incidence of brain tumours among psychotic patients is no greater than among those in general hospitals. Of 75 tumours collected, 48 per cent. were gliomas and 30·6 per cent. meningiomas. Of the gliomas 66 per cent. belonged to the group of spongioblastoma multiforme and 16 per cent. were astro-

cytomas. The tumour belonging to the former group is extremely rapidly growing and gives rise to acute mental changes. The average duration of life from the onset of symptoms was found to be only 9·1 months, whereas in the more benign astrocytomas it was three and a half years. Histological study reveals no pure type of glioma. The term spongioblastoma multiforme fails to cover all the elements contributing to its structure, and the name "glioblastoma multiforme" seems more appropriate. The occurrence of combined forms of glioma in the same tumour was as high as 14 per cent. Besides the combined forms, many tumours show transitions between related types of cells as, for example, between astrocytoma protoplasmicum and astrocytoma fibrille, ependymoblastoma and ependymoma, neuroepithelioma and ependymoblastoma, etc. One tumour was presumably formed almost entirely by oligodendroglia.

C. S. R.

SENSORIMOTOR NEUROLOGY.

[219] **Epilepsy in chronic epidemic encephalitis.**—A. WIMMER. *Acta Psychiat. et Neurol.*, 1928, iii, 267.

IN the experience of most observers epilepsy must be an excessively rare accompaniment of epidemic encephalitis. Professor Wimmer, however, has been able to collect no fewer than 32 of such cases In 12 instances there were other neurological signs present, but in ten the epilepsy constituted the sole symptom. It must be stated that the accounts of the cases are not convincing as regards the diagnosis of encephalitis, and in only two or three were signs of Parkinsonism present; in the majority, other signs coexisted, such as areas of altered sensation, pyramidal types of hemiplegia, disc changes which are themselves outside the usual encephalitic picture. In one so-called monosymptomatic case in which a bloodstained spinal fluid was withdrawn, the diagnosis of spontaneous subarachnoid hæmorrhage seems much the more obvious solution of the symptoms. Some diagnosis other than encephalitis which would harmonize better with the rest of the symptoms can indeed be suggested in almost every instance. Although the manifestations of epidemic encephalitis are admittedly protean, we feel that to broaden our clinical conception too far is to threaten the stability of encephalitis as a nosological entity. M. C.

[220] **Epilepsy in children.**—H. T. PATRICK. *Amer. Jour. Dis. Child.*, 1928 xxxv, 653.

BRIEF outlines of the histories of 34 cases are given.

The point which the author makes is that a very slight recurrent attack beginning in childhood may be the precursor of major epilepsy in later life. Some of the early attacks he describes are uncommon and interesting, e.g., laughter and crying, excessive flow of saliva, belching, feelings of loneliness, everything "looking blue."

He urges the importance of attention to diet, bowels, exercise, sleep and emotional life. Bromide and luminal he finds are the most useful drugs, and he also gives thyroid in some cases. He has no sympathy with the view that emotional conflict of some sort can cause epilepsy.

P. W.

[221] **Considerations on pyknolepsy** (Considérations relatives à la pycnolépsie). —M. MOREAU. *Jour. de Neurol. et de Psychiat.*, 1928, xxviii, 772.

UNDER the composite title of " para-epilepsy " Vergara has included such other paroxysmal affections as narcolepsy, migraine, vaso-vagal attacks, dipsomania, periodic crepuscular states, and pyknolepsy. The last-named disorder resembles petit mal but differs in the large number of attacks, the absence of occasional major seizures, the lack of intellectual deterioration and the tendency to spontaneous cure. In an excellent review of the condition, Moreau deals with each of these criteria in turn, and gives eight personal examples. He emphasizes the inefficacy of bromide in treatment ; he concludes that the two chief points of differentiation from minor epilepsy are the multiplicity of the attacks and their tendency to disappearance at puberty.

M. C.

[222] **Aneurysms of the cerebral vessels.**—I. J. SANDS. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 37.

CEREBRAL aneurysms may be caused by arteriosclerosis, septic emboli or congenital weakness of the vessel walls. The signs of rupture are those due to diseases causing the aneurysm, those due to pressure or irritation of the surrounding brain structure, and those due to subarachnoid hæmorrhage. In a person suffering from hypertension or arteriosclerosis, or from a general or local infection, especially infective endocarditis, the sudden onset of headache, nausea, vomiting, unconsciousness and convulsions, and the presence of cervical rigidity and Kernig sign, disturbances in pupillary reflexes, blurring of the discs, papillœdema, diplopia, paralysis of the cranial nerves, disturbances of deep reflexes and the presence of bloody spinal fluid, point to a ruptured intracranial aneurysm.

Absolute rest in bed is the most important therapeutic measure ; after the first confirmatory lumbar puncture, further punctures are contra-indicated.

R. M. S.

[223] **A case of haemangioma of the brain** (Ein Hämangioma cerebri).—W. J. C. VERHAART. *Acta Psychiat. et Neurol.*, 1928, iii, 51.

AN insane epileptic patient was admitted to hospital in 1901. At that time neurological examination revealed no abnormality. In December, 1925, he was transferred to another institution under the author's observation. Epileptic fits still occurred at intervals, but owing to the patient's irritability and maniacal assaults, full neurological examination was never attempted. The

attendants noted, however, that movements of the limbs were slow and awkward; speech was monotonous but correctly articulated. Fourteen months after admission the patient died of influenzal pneumonia, at the age of 57. Post-mortem investigation of the brain revealed a very thick blood vessel on the surface of the right hemisphere, extending upwards and backwards from the frontal operculum. Here there was a knot of large vessels which actually formed part of a vascular tumour (hæmangioma). The cortex of the foot of the precentral gyrus and Broca's area was destroyed by this mass. Coronal section through the brain revealed the deep extent of the hæmangioma. The white matter of the lower aspect of the frontal lobe was involved as far inwards as the outer wall of the lateral ventricle.

M. C.

[224] **The anatomical basis of hemiballismus and hemichorea** (Ueber das anatomische Substrat des Hemiballismus bzw. der Hemichorea).—Eugen Wenderowic. *Zeits. f. d. g. Neurol. u. Psychiat.*, 1928, cxiv, 78.

This is a valuable communication meriting full study. It deals with those cases of hemichorea which are attributable to lesions in the mesencephalon, more particularly to those assigned by some writers to lesions of the corpus Luysii. A personal case of the kind is included. The author gives a long and useful discussion of the problem of choreic pathogenesis and his conclusion is, that all can be explained as being caused by "irritation" at one or other level on the course of the well-known cerebello-central path, which leads from the cerebellum by red nucleus and regio subthalamica to optic thalamus and cerebral cortex. He adduces evidence in favour of this view and excluding all attempts to explain chorea by lesions of striatal cells; he believes that striatal cases, such as they are, produce effects by "irritation" of the thalamo-cortical part of the above-mentioned system.

S. A. K. W.

[225] **The position of postvaccinal encephalitis among the infective diseases of the central nervous system** (Die Stellung der postvakzinalen Encephalitis in der Reihe infektiöser Erkrankungen des Zentralnervensystems).—H. Pette. *Centralb. f. Bakt. Parasit. u. Infektionskr.*, 1929, cx, 134 (Bhft.).

In young children postvaccinal encephalitis begins acutely without obvious prodromata, nearly always with convulsions, unilateral or bilateral, which may continue for hours or days. Consciousness is lost at an early stage. The temperature rises, often to 40° C. or higher. Following the stage of excitation comes one of general paralysis with coma, the total duration seldom exceeding four days. In the case of adults the clinical picture is somewhat different. Convulsions are much less frequent, but local manifestations are common, in the shape of monoplegia, hemiplegia, or paraplegia. Meningismus of greater

or less degree usually accompanies these palsies, which are of the flaccid type. Deep and cutaneous reflexes are lost, and a Babinski response is not infrequent. Rectal and bladder impairment is often noted. Cranial nerve involvement has been remarked, sometimes of bulbar type. The spinal fluid is either normal or shows a moderate lymphocytosis. Speaking generally, the acuity and the fleeting character of the symptoms are of diagnostic significance, for the palsies often disappear quickly and the reflexes return.

This symptomatology corresponds to a diffuse inflammatory state of the central nervous system. Its histological basis, as found in acute fatal cases, is invasion of the white matter of the neuraxis (though the grey matter is never entirely unaffected), with involvement (round the small vessels) of parenchyma, notably the myelin sheaths, and to a less extent the axis-cylinders. The myelin is attacked by gliogenic elements, undergoes fatty changes, and disappears. The glial reaction in the immediate vicinity of the affected vessels is very striking. Swelling of glial cells in relation to limiting structures (e.g., on the periphery of the cord and under the ventricular ependyma) is sometimes pronounced. Mesodermal reactions are highly variable ; infiltrates in meninges and vessel walls are sometimes absent, sometimes well-marked. Actual changes in ganglion-cells are of minor degree and out of proportion to the severity of the general process.

It is natural to see in these findings a close resemblance to those of so-called acute disseminated encephalomyelitis of the adult, a condition long familiar to the neurologist. The exact nosological position of the latter, and its relation to disseminated sclerosis, have been a fruitful subject of controversy.

In the opinion of the author, acute disseminated encephalomyelitis has in recent years been definitely on the increase, an opinion held also by others. The clinical picture is one of encephalitis, or myelitis, or of a combination ; its onset is acute and the symptoms often exhibit a surprising fleetness of duration. Death in the acute stage is exceptional. The histological appearances of several recent cases of the author are almost identical with those of postvaccinal encephalitis, especially in the involvement of the white matter ; any difference consists in the relative diffuseness in the case of the latter, and relative local concentration in the case of the former. But this statement must be qualified as a result of a recent examination of a typical case of postvaccinal encephalitis, fatal on the eighth day, in which a distinct tendency to local lesions was found.

S. A. K. W.

[226] **Acute tabetic ataxia, with rapid bulbar termination** (Les ataxies aiguës tabétiques à terminaison bulbaire rapide).—L. VAN BOGAERT. *Jour. de Neurol. et de Psychiat.*, 1929, xxix, 81.

IN 1921, Guillain drew attention to the occurrence of acute ataxia in the course of tabes dorsalis ; in such cases, the ataxia is transitory, responding to anti-syphilitic treatment in the course of a few weeks. The two cases here recorded

differ in that fulminating bulbar symptoms appeared and rapidly led to death. In the first patient, a left facial palsy was followed by severe dysphagia, unilateral palatal paralysis, tachycardia and impeded respiration. Death supervened ten days later. The second case comprised somnolence, lingual and palatal hemiparesis, left-sided ptosis, tachycardia, Cheyne-Stokes respiration and syncope : the patient died after four days. Pathological study of these cases demonstrated, in addition to the characteristic changes of tabes, an extensive meningovascular inflammatory reaction throughout the central nervous system. Vascular reactions were particularly intense in the bulbar nuclei. M. C.

[227] **Degenerative myelitis after spinal anaesthesia** (Degenerative Myelitis nach Spinal-Anästhesie).—M. NONNE and H. DEMME. *Wien. Klin. Woch.*, 1928, 1002.

A MAN of 51, suffering from double hernia, received a spinal injection of ' tutocain ' for the production of spinal anæsthesia. The paralysis which followed did not disappear, and from the level of L4-5 downwards a complete motor and sensory interruption, with involvement of bladder and rectum, remained. Sixteen months after the operation cystopyelitis and tuberculosis of the bladder resulted in death. Pathologically a severe toxidegeneration of conus and cauda equina was found, with ascending changes in the posterior columns of the cord.

It appears that another case operated on at the same time, in which an ampoule from the same batch of ' tutocain ' was used, was followed by similar lumbosacral paralysis. The authors are unable to explain the result through any error of technique, and are rather at a loss to account for it, since the same agent has often been employed with complete success. They suppose that in their case the patient's nervous system was already predisposed to severe reaction from a relative light ' lesion,' because of preceding tuberculosis and syphilis. S. A. K. W.

[228] **A few remarks on the question of dissociation between voluntary movements and emotional innervation in peripheral facial paralysis**.—G. H. MONRAD-KROHN. *Acta Psychiat. et Neurol.*, 1928, iii, 35.

IN some cases of slight peripheral facial palsy, patients complain of an asymmetry which appears only when they smile. This apparent dissociation between voluntary and emotional movement may be the only feature remaining after a Bell's palsy. It is explained thus : movements of moderate range are performed equally on the two sides of the face ; volitional movements are easily kept within this " subliminal range " and hence no asymmetry appears. When, however, the patient gives a broad smile of genuine emotion, the movement is no longer confined within the subliminal range, and asymmetry at once becomes obvious. M. C.

[229] **Facial diplegia.**—F. P. CUNIER. *Amer. Jour. Med. Sci.*, 1928, clxxv, 811.

THE author first outlines a classification of possible causes of nuclear and infranuclear facial paralysis. He then describes a case of polyneuronitis with cranial nerve involvement, and pleocytosis in the cerebrospinal fluid. The second case he outlines is one of myasthenia gravis in which the sudden onset of bulbar and facial pareses caused a misdiagnosis of polyneuronitis to be made.

The differential diagnosis between this condition, acute epidemic encephalitis and polyneuronitis is then discussed. P. W.

[230] **Parinaud's syndrome with preservation of automatic reflex movements; vesperal hallucinations in the course of a neurotropic infectious syndrome of unknown cause** (Syndrome de Parinaud avec conservation des mouvements automatico-réflexes ; hallucinose vespérale, au cours d'un syndrome infectieux neurotrope d'origine indéterminée).—L. VAN BOGAERT and R. DELBEKE. *Jour. de Neurol. et de Psychiat.*, 1929, xxix, 91.

THE main clinical features of this case were :—

1. An acute infection with fever ; pleocytosis and hyperalbuminosis of the spinal fluid ; sleep lasting seven days ; emaciation ; general akinesis with rigidity and cerebellar manifestations. The tendon jerks were present but no abdominal responses were obtainable.

2. Abolition of voluntary eye movements although automatic movements were present. Later, the power of voluntarily looking to the side returned, associated with nystagmus.

3. A peculiar episodic hallucinatory state, coming on especially towards nightfall.

The authors discuss the diagnostic possibilities of their case with particular reference to disseminated sclerosis, syphilis, and epidemic encephalitis.

M. C.

[231] **Raynaud's disease associated with cancer of the stomach.**—T. IZOD BENNETT and E. P. POULTON. *Amer. Jour. Med. Sci.*, 1928, clxxvi, 654.

A CASE is recorded of a man who had marked symptoms of Raynaud's disease in both hands. The fingers were slatey blue and there was trophic disturbance of the nails : further, he had pains in the hands of paroxsymal type. Owing to the severity of the symptoms removal of the right inferior cervical sympathetic ganglion was undertaken, but the patient died. At post-mortem a large carcinoma of the lesser curvature of the stomach was found, and in the inferior cervical ganglia a metastasis. The authors conclude that the symptoms of Raynaud's disease resulted through stimulation of the sympathetic ganglia owing to the deposition of metastatic cells in their proximity.

E. A. C.

[232] **A clinical study of enuresis.**—Adrien Blayer. *Amer. Jour. Dis. Child.*, 1928, xxxvi, 989.

A large number of children suffering from enuresis have been examined critically: 129 were boys and 123 girls. The author concludes that the voluntary nervous system plays an unimportant rôle in enuresis and that the condition is a disturbance of the physiology of micturition, probably due to stimuli arising in the bladder itself, which for the time being place it beyond the control of the will. Consequently disciplinary measures are found ineffectual. Most benefit was derived from the administration of atropine and from massage of the bladder: this form of treatment resulted in a cure in 80 per cent. of the cases. E. A. C.

[233] **The hypertrophies of infancy and childhood.**—A. V. Stoesser. *Amer. Jour. Dis. Child.*, 1928, xxxv, 885.

The author gives a classification of the types of hypertrophy occurring in infancy and childhood. He divides them into true and false hypertrophies. In the true the skeletal system as well as the muscles and soft tissues is involved. The skin may be rough and thickened and may show pigmented areas, naevi and telangiectases. Characteristically it does not pit on pressure. The true hypertrophies may be partial, that is, affecting one digit or limb only or they may affect one half of the body. They may also be crossed, e.g., the right arm and left leg being affected. Nothing definite is known as to the etiology of either the congenital or acquired variety.

The false hypertrophies are those in which the skeletal system is not involved. Under this heading the author includes Milroy's disease and congenital elephantiasis. In Milroy's disease the skin itself is but little affected though some fibrosis occurs in the subcutaneous tissues. In congenital elephantiasis there is marked fibrosis and an increase of fat in the connective tissue layers of the skin, together with a variable distention of the lymphatics and capillaries. P. W.

PROGNOSIS AND TREATMENT.

[234] **Subacute combined degeneration of the cord; an investigation of sixty-one cases, with special reference to liver treatment.**—C. C. Ungley and M. M. Suzman. *Newcastle Med. Jour.*, Jan. 1929, 1.

The study is based on the examination and treatment of 61 cases diagnosed as subacute combined degeneration, admitted to hospital during the last four years. The criteria on which the diagnosis has been made do not appear open to criticism, although the authors have excluded cases with loss of deep reflexes because "a certain number of patients with pernicious anæmia exhibit these phenomena" (*sic*). A study of the geographical distribution of subacute combined would appear called for and likely to prove of value, if an average of 15 cases a year (and of the above-mentioned limited class) is found at the Royal Victoria Infirmary of Newcastle.

Of the 61, 30 were treated with liver, and the following are the results in liver-treated and non-liver-treated cases respectively :—

	Liver.	No liver.
Improved	17	0
In statu quo, or worse	8	3
Deaths	5	28

These figures are rather remarkable and not quite consonant with the results of other investigators. Nevertheless they are highly impressive.

The authors administer cooked liver (3½ to 4 lbs. per week) for four to six weeks, followed by 1½ to 2 lbs. of liver indefinitely. When such large quantities cannot be taken, the equivalent in liver extract may be substituted for all or part of this amount. Arguing from the clinical recovery of some of their cases, the authors say that "since all evidences of cord involvement may disappear, it is clear that the degenerative changes in the white matter in this disease are not of a permanent character."

J. V.

[235] **The relation of neurorecurrences to late syphillis.**—J. E. Moore. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 117.

The term neurorecurrence is limited to a syndrome consisting of the sudden appearance of signs and symptoms of involvement of the central nervous system in a patient with early (primary or secondary) syphilis who has received an amount of treatment insufficient to eradicate the infection, and has then lapsed from treatment. The clinical manifestations are varied, but usually consist of an acute or subacute syphilitic meningitis, commonly with, but sometimes without, focal lesions of the cranial nerves. In a series of 81 cases studied by Moore neurorecurrences occurred in at least 0·2 per cent. of patients. Males appear more susceptible than females, and the type and severity of early lesions do not apparently play any part in its production.

Neurorecurrences are rare after the administration of bismuth, and always follow inadequate treatment, which often consists of a few injections of arsphenamine without mercury or bismuth.

The behaviour of the Wassermann reaction during the treatment preceding the neurorecurrence is not significant. The reaction in the blood is frequently completely negative at the time of appearance of a neurorecurrence, and the spinal fluid does not show anything characteristic, though it usually gives positive tests.

The time-interval between the last treatment and the development of a neurorecurrence averages eight weeks, the extremes being one week and six months. The immediate clinical response is usually satisfactory except in lesions of the auditory nerve ; here the paralysis is frequently permanent.

The ultimate prognosis of neurorecurrences is grave. Of patients with neurorecurrences who were given inadequate treatment, 50 per cent. developed

clinical neurosyphilis, and even after adequate treatment this occurred in four of fourteen patients. Three developed paresis.

The probability of a neurorecurrence can be minimised in several ways, the most important of which is that the treatment of early syphilis should be continuous without any rest periods until the point is reached when treatment may be finally stopped. In the Medical Clinic of the Johns Hopkins Hospital an arsphenamine dosage of 0·1 gm. per twenty-five pounds (11·3 kg.) of body weight for the first three injections of the first course of treatment, and the substitution of intramuscular injections of bismuth for inunctions of mercury in the interim, have apparently reduced the incidence of neurorecurrences.

R. M. S.

[236] **Sympathectomy in the treatment of angina pectoris: comparison of results with those from paravertebral alcohol injection.**—Edward P. Richardson and Paul D. White. *Amer. Jour. Med. Sci.*, 1929, clxxvii, 161.

The purpose of this paper is to put on record the experiences of the authors in the operative treatment of angina pectoris. In a series of eight cases various operations were performed. In five cases the superior cervical ganglion was removed, with complete relief in one only. Removal of the cervical sympathetic chain was performed in two cases giving considerable relief to only one.

The only case in which the inferior cervical and first thoracic ganglia were removed proved fatal; while in another case death occurred before the completion of the operation. In a further series of eight cases, paravertebral alcohol injections were performed with complete relief in three cases and partial relief in the remaining five; several of these patients were able to resume work. From these statistics it appears that alcohol injection offers more hope of relief and is less dangerous to life; the results on the whole are disappointing.

E. A. C.

[237] **Brief report of the use of sodium luminal in mental and nervous diseases.**—Lauren H. Smith. *Amer. Jour. Psychiat.*, 1929, viii, 727.

Luminal sodium is an efficacious sedative and soporific in mental and nervous disease cases, particularly in those which contain elements of agitation, anxiety, various degrees of overactivity, and extreme insomnia. Its use is not so much indicated, however, in those cases having marked affective reactions of the hyperactive and elated types. In 90 cases, 73 showed good sedative effects; 39 showed good soporific effects; 4 showed transitory sedative effects; 11 showed poor sedative effects; 5 showed poor soporific effects; and 7 showed untoward results. Susceptibility to this drug varies markedly. Minimal doses produce toxic symptoms as well as massive doses; toxicity is not common, but idiosyncrasy may be present in more cases than usually expected with other drugs used for similar purposes. The dose should ordinarily range from

one and a half to four and a half grains for sedation and securing slumber. Larger doses may be given cautiously if the reaction of the patient to smaller doses has been studied. Its use is indicated in depressed manic-depressive states, involutional melancholia, dementia præcox excitements, anxiety states. It is contraindicated in gastritis, nephritis, and psychoses with emotional states and activity above that of normal.

C. S. R.

[238] **Treatment of facial neuralgia by trichlorethylene** (Le traitement de la névralgie faciale par le trichloréthylène).—Du Busscher. *Jour. de Neurol. et de Psychiat.*, 1929, xxix, 97.

Plessner, in 1915, demonstrated before the Berlin Medical Society four workmen suffering from trichlorethylene poisoning. Symptoms comprised vertigo, malaise and vomiting; examination revealed slight papillœdema and anæsthesia over the face. Sensation in other regions remained normal. Oppenheim, who was present, suggested that the apparent affinity of trichlorethylene for the sensory division of the trigeminal nerve might be utilized as a treatment for facial neuralgia. The procedure as now employed consists in the inhalation of 20 to 30 drops of trichlorethylene sprinkled on gauze, thrice daily; the drug may also be given internally in the form of capsules containing 0·25—0·30 g. No serious untoward effects have been described, other than giddiness and muscular weakness. Rarely, unconsciousness has resulted. The drug has been dispensed in the United States, under the trade names of 'gemalgine' and 'trethylen.' In the author's series of 31 cases, six were rapidly and completely cured: four showed remissions lasting from two weeks to six months; and three showed improvement with subsequent relapse. In 18 instances, no benefit was noted.

M. C.

[239] **A new hypnotic: dial** (Sur un nouveau hypnotique: le dial).—H. Hoven. *Jour. de Neurol. et de Psychiat.*, 1929, xxix, 39.

Dial (diallyl-barbituric acid) has been extensively employed in this country as a safe and efficient hypnotic for at least ten years. In the present communication, Hoven records the use of dial in rather larger doses than usual. He concludes that it is a sedative and hypnotic which gives very good results in psychiatric practice, and is unassociated with grave complications. In excited states, he gives 20—30 cg. daily (=3—6 grains). In severe cases of mania he gives 2—4 ampoules (each of 20 cg.) daily, in combination with 0·5—1 mg. of hyoscine. The usual dose of dial employed in this country is 1½ grains (10 cg.).

M. C.

[240] **The significance of the afferent impulses from the skin in the mechanism of visceral pain: skin infiltration as a useful therapeutic measure.**—Soma Weiss and David Davis. *Amer. Jour. Med. Sci.*, 1928, clxxvi, 517.

In cases of visceral pain, if the pain is referred it should be abolished on rendering the painful skin area anæsthetic: if the pain is essentially visceral no alteration should take place. Working on such a hypothesis, 25 cases were so studied. By means of skin infiltration with novocain the localized pain was entirely relieved but in many a dull unpleasant sensation remained: the latter sensation is considered by the authors to be true 'visceral' pain. Their observations largely confirm the work of Head. In a series of controls when localized pain was obtained by distension of the œsphagus, skin infiltration caused the pain to migrate to segments above or below the original site. As a result of their investigation they conclude that skin infiltration may be of therapeutic value in cases with severe visceral pain.

E. A. C.

Psychopathology.

PSYCHOLOGY.

[241] **The dream imagery of the blind.**—Elinor Deutsch. *Psychoanalytic Review*, 1928, xv, 288.

The belief of many people that the blind either do not dream at all or that if they do, their dreams must be very vague and incomplete, is shown here to be erroneous. The majority of people are so accustomed to thinking and forming their mental images almost entirely in terms of vision that they are apt to forget that there are several other sense modalities in terms of which imagery may be built up. The blind not only dream just as vividly as those who see, but are perhaps less cognizant of the lack of vision when asleep than when awake. The conclusions here drawn are from material obtained from children in Blind Schools and from the writer's personal experience. It is shown that the imagery in the dreams is entirely auditory, kinesthetic, static, and tactile. The sense of hearing usually plays the most important part, while the others seem to be of about equal moment. Gustatory and olfactory imagery is negligible.

C. S. R.

[242] **The psychological conception of mental disease.**—Edward A. Strecker. *Mental Hygiene*, 1928, xii, 343.

The psychological conception of mental disease begins by advancing the hypothesis that the mind operates according to certain laws which are as fixed as the law of physics. From this basic element of the theory, it follows

that these laws operate alike for the mind that is sick (abnormal) and for the mind that is sound (normal). When, however, we come to try to state the laws that govern the actions of the mind, we are at once beset with difficulty. We are largely concerned with attempts to formulate scientific explanations that will account for the methods by which repressed complexes insure for themselves an appearance in consciousness, determine behaviour in normal individuals, and in those who are mentally sick condition symptoms and types. At best we can say that psychopathology has succeeded in interpreting inconstant psychological terms some part of the behaviour of normal individuals and a few of the symptoms of those who are abnormal. It is very likely that extensive modifications will have to be made, old concepts abandoned, and new ones advanced, before anything approaching scientific accuracy is available. When we try to designate a deeper, more basic and universal factor, we can only surmise. Schools differ in this respect and respectively trace it to sex, the herd instinct, or a sense of inferiority. It is doubtful if we can be absolutely sure that psychological and physiological conceptions are in the last analysis separate entities and opposed to each other. C. S. R.

[243] **The analysis of personality.**—Ives Hendrick. *Amer. Jour. Psychiat.*, 1929, viii, 535.

A critical survey of 147 papers, most of which report experiments in rating or testing personality traits, made chiefly by American psychologists during the last ten years, tends to discourage the notion that any satisfactory instrument for objective personality has yet been devised. No effort can be indicated which might possibly enable the student of psychiatry to make a precise and accurate description of some aspect of personality that would be more trustworthy than the more or less crude methods of experienced clinical description on which psychiatrists now rely. Personality is much more than a sum totality of its components; a compendium of the individual traits misses the essential element, the 'integration' or interrelationship of these factors. The most serious defect is the failure to devise any adequate criterion for estimating the validity of a trait test. Most tests depend upon single or group ratings of the subjects for a criterion of success in measuring what they purport to measure; and these ratings are generally made by people such as friends, teachers, or lay psychologists, who have had no intensive training in personality examination. Few have the opportunity of the psychiatrist to judge all aspects of an individual, and to distinguish what he is from what he seems to be. Psychologists may be familiar with psychiatric viewpoints expressed in books and journals, but they do not grasp their full significance, because they are not clinicians, and do not deal in every day work with the vital problems of human nature. When the viewpoint and the experience of psychiatrists and the methods and zest for scientific precision of psychologists shall be mated, the birth of scientific psychiatry will be imminent. C. S. R.

[244] **Some central nervous system factors in the make-up of consciousness.**—Louis Casamajor. *Amer. Jour. Psychiat.*, 1929, viii, 457.

Consciousness is a relative term used to describe states of mental clarity. Animals incapable of developing conditioned reflexes or symbols are probably incapable of consciousness. The greater any animal's capacity to develop symbols, the more nearly conscious are his mental states. The most efficient and workable symbols are the symbols of speech and language; the animal that has command of these is the one that is capable of the greatest consciousness, and for the same reason the one whose more primitive unconscious is more elaborate and replete with potentialities for trouble.

C. S. R.

NEUROSES AND PSYCHONEUROSES.

[245] **Studies in Stuttering. IV. Studies of action-currents in stutterers.**—S. T. Orton and L. E. Travis. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 61.

Golla was the first to study the action-currents on the two sides of the body during voluntary muscular contraction. He recorded the action-currents in the extensor muscles of each forearm when a left-handed subject was requested to dorsiflex both hands the moment he heard a sound signal, and found a well-marked vibration coming from the extensors of the left forearm before any observable vibration appeared from the right. He further reported that when the subject raised the right hand only, the vibrations nevertheless appeared from the left arm before they did from the right; but that when the left hand was raised, a response did not follow from the right arm, although it was again recorded from the left.

This work suggested to Orton and Travis a method of determining the native handedness or natural physiological bent after the person has been exposed to a variety of chance and determined factors of motor training. It was found that when the currents of muscular action from both forearms are recorded during simultaneous voluntary contractions, they may appear simultaneously in the two arms, but in by far the greater number of trials the action-currents from one arm precede those from the other by a short interval.

In records of right-handed normal speakers, the number of times that the action-currents precede in the right arm far exceeds the precedence in the left, and also far exceeds the incidence of the simultaneous leads. In right-handed stutterers the greatest number of leads is in the left arm, and the number of simultaneous leads is much greater than in normal speakers.

The authors tentatively advance the suggestion that in many stutterers motor facility as determined by training is out of harmony with the physiological leads; and this envisagement fits with the clinical observations of the relationship of stuttering to enforced shifts of handedness in writing in young children.

R. M. S.

[246] **Neuroses in the tropics.**—H. B. Day. *Proc. Royal Soc. Med.*, 1928, xxi, 1667.

The study of the mind of the native in the primitive races of mankind, and in the different and aged civilizations of the east, is of importance in elucidating the mechanisms of the psychoneuroses. In unsophisticated natives hysteria is relatively common. Psychasthenia occurs among races, as well as persons, of a neurotic type. In the east it often appears to be an undesirable waste-product of competitive conditions introduced by western civilization. The mental strain is too great for the weakling, and a nervous breakdown may occur if the additional load of toxæmia or conflicting emotions and thwarted hopes be imposed. Similar and further strains affect the European resident in the tropics. The monotony of trying climatic conditions and of isolation are in striking contrast with life in England. Scorching days, suffocating nights, loss of sleep, the tension of an electrically charged atmosphere, monotonous rain, the petty annoyances of life, the irritation of biting insects, uninviting food, and the necessity of holding communications in a foreign language, have a cumulative effect. Under these circumstances true neurasthenia may develop.

The development of a psychoneurosis is due to failure to adapt by mental adjustment to the circumstances of the environment. Persons whose moral control and education are not of high degree may succumb to the temptations of their new environment and gradually sink to a low level. They satisfy their desires at the price of their civilization. The same fate may befall those of good promise, whose higher mental faculties have been blunted by alcoholism or by repeated illness. Certain tropical diseases are capable of inducing not only psychoneuroses, but actual insanity. Malaria and pellagra are the main ones. In the case of the former a confusional insanity or melancholia is the usual form of psychosis produced by gross cerebral involvement. Psychasthenic conditions are more common, characterized by mental apathy, inattention, and amnesia. Pellagra is a more important cause of psychosis. The effect in the brain appears to be a purely toxic action on the neurones, and the symptoms range from simple depression and backwardness to confusional insanity and melancholia, terminating in dementia. Intestinal infections appear to be an important cause of psychoneuroses and states of depression.

C. S. R.

[247] **The psychasthenic reaction.**—Nathaniel H. Brush. *Amer. Jour. Psychiat.*, 1929, viii, 565.

The views of Janet and Freud are spoken of in relation to psychasthenia. The writer looks upon the compulsion neurosis as a true defence neurosis, and its symptoms, at least the compulsive acts, which develop late in the course of the disorder, as being of the nature of ceremonials, which not only serve to disguise the true situation from the patient, thus acting as a defence, but to atone for an evil. An illustrative case is given. In the history of this patient

are presented the typical symptoms of a compulsion neurosis arising as a result of a sex trauma experienced earlier in life. The symptoms, in the main, representing the efforts on the part of the patient to atone for her imagined uncleanness, her compensatory atonement being represented by symbolic attempts at self-purification.

C. S. R.

[248] **Anxiety** (Ueber die Angst).—H. MARCUSE. *Monats. f. Psychiat. u. Neurol.*, 1929, lxxi, 277.

THIS is a readable essay on anxiety in general, of which two varieties, somatogenic and psychogenic, are distinguishable. Anxiety as a state is separable from mere reactions of anxiety, and the question is discussed why one should develop in one instance, and the other in another. Some significance is attached to what is called 'hypernoia,' by which term is meant a recognisable constitutional component of a psychical class consisting in predominance or fertility of ideas; hypernoia is stated to be the normal constitution of cultured people. Its converse is hyponoia. The reaction of the hypernoic and hyponoic to conditions giving rise to anxiety is different in the two. Thus with the hyponoic relative poverty of ideation, of imagination, will enable him to escape the anxiety state that might otherwise come into being. The general paralytic lives in an impossible cosmos of happiness because he is hyponoic. If imagination is fleeting anxiety states are slight. The reaction of the two categories to the same stimulus can be put thus: in the case of the hyponoic, the immediate response, the momentary feeling of anxiety, fright, and so on is stronger; he reacts without deliberation, reflexly. In the case of the hypernoic loss of self-control is much less obvious (unless the stimulus be overwhelming, as in earthquake or railway accident); his imagination, his store of ideas, is in reality an aid to control. In Freudian terminology, it may be said that the hyponoic abreacts, the hypernoic represses. The experience is much more quickly over in the former, and it is in the latter that psychical repercussions may lead to anxiety states.

S. A. K. W.

PSYCHOSES.

[249] **The origin of schizophrenic symptoms** (Erfahrungen zur Frage der Entstehung schizophrener Krankheitssymptome).—HANS SEELERT. *Monats. f. Psychiat. u. Neurol.*, 1929, lxxi, 215.

Two cases are described, both in women, in which organic brain disease supervened in the course of a schizophrenia. In the first case, after years of typical paranoid schizophrenia, a right hemiplegia and aphasia developed; in the second, symptoms of intracranial tension suggesting a tumour, possibly a case of cysticercus. Examination in the latter was difficult owing to the patient's mental state.

In neither did the appearance of the organic cerebral affection make any recognisable difference to the course of the psychosis, and this is used as an argument against any view which attributes dementia præcox to an underlying anatomical lesion. At the same time, the author allows validity to the contention that the supervening organic states may not, from localisation or nature or duration, have been calculated to interfere with the clinical course of the psychosis.

J. S. P.

[250] **Association of psychoses with the puerperium.**—ELEANORA B. SAUNDERS. *Amer. Jour. Psychiat.*, 1929, viii, 669.

A SURVEY of seventy-five cases of psychoses associated with the puerperium showed that in many there were at the onset expressions of conflict about the infant and its significance. The study did not give evidence of definite etiology in toxæmia or exhaustion and there was little to prove association with endocrine disturbances. It appears more profitable to refer the psychosis of this epoch of life to psychogenic factors, and of these the most important seems to be those factors which make for sexual maladaptation or maladjustment. It has been generally accepted that there is nothing distinctive which differentiates psychoses of the puerperium from corresponding types of psychoses at other epochs in life. Observations made upon the cases selected in this study do not indicate any types of reaction or prognosis which differentiate the puerperal psychoses from those not associated with childbirth, except in so far as to affirm that in cases of women whose adaptation to the marital relations is satisfactory, childbirth is not likely to be found a precipitating factor.

C. S. R.

[251] **Iodine metabolism and elimination in the psychoses** (Studien über den Joddurchgang und die Jodausscheidung auf dem Harnwege bei Psychosen).—H. HOFF and E. STRANSKY. *Jahrb. f. Psychiat. u. Neurol.*, 1929, xlvi, 9.

THE work here reported concerns the ingestion of iodine in the form of ·5 g. of potassium iodide and its elimination by the kidneys and subsequent quantitative estimation. The procedure is described in the minutest detail as regards both preparation and control of patient and chemical technique.

Among the general conclusions are the following :—

1. In the case of the melancholic phases of manic-depressive psychoses iodine is held longer in the body, i.e., is less quickly eliminated per vias urinarias, than in the case of normal subjects and of non-syphilitic subjects : in manic phases, on the other hand, elimination is characteristically faster than in the normal. This conclusion suggests that iodine metabolism may play a part in manic-depressive psychosis.

2. In cases of schizophrenia an oscillation of elimination takes place, quite independent of the clinical phases of the affection ; it is a kind of elimination ' ataxia ' and may bear some relation to the basic character of the disease.

3. In cases of old syphilitic psychoses and in general paralysis there is a tendency to iodine retention as in melancholia.

4. In other forms, inclusive of the arteriosclerotic, no special finding has been obtained.

J. S. P.

[252] **Neurotic superstructures in psychoses.**—Ian D. Suttie. *Jour. Ment. Sci.*, 1928, lxxiv, 660.

A comparison is made between the placidity of the stable paranoiac who has achieved an emotionally satisfactory compromise between the world of wish and of reality, and the tension, unhappiness and periodic outbursts of the patient with paranoid dementia præcox, who wears out his emotional mechanism without ever reaching such an adjustment. This internal tension is not destructive to the patient's mind but is ruinous to his social relations. The author's thesis is that this tension is neurotic rather than psychotic and that by dealing with this secondary matter the psychotic can not only be maintained as an agreeable and co-operative individual, but his psychosis may even be kept in the form that best lends itself to a natural and social mode of treatment. Cases are quoted to illustrate this point and three practical suggestions are made. (1) Intensive treatment from the moment the patient comes in contact with his physician, but with no contact between the two other than therapeutic, i.e., no social or administrative relations. (2) A strong attempt to educate the patient in the theory of knowledge and to develop his capacity for formal logical criticism. (3) The concentration upon any neurotic as distinct from psychotic symptoms that may be present, and the postponement of the attack upon the psychosis until this has been completed.

C. S. R.

[253] **Psychotic reaction in the psychopath.**—G. E. Partridge. *Amer. Jour. Psychiat.*, 1929, viii, 493.

Clinical reports on a hundred recent admissions were used as a basis for this study and twenty-two selected cases in which there was evidence of a more pronounced psychopathic background were especially considered as useful evidence. There was a tendency for the more distinct psychopathic pictures to be related to the manic-depressive or mixed forms of reaction, while the schizophrenic break, in anything like a pure form as related to pronounced psychopathic adjustment, was not clearly represented. There was definite contrast between the background of inadequacy (not usually identifiable with our conception of inadequate types of psychopathic personality), commonly seen in the schizophrenic reactions, and the ' classic ' psychopathic personality with emotional instability and incompatibility found in the manic-depressive

of manic phase and the mixed types of reaction. Superficially at least this contrast is well expressed by the terms 'asthenic' and 'sthenic' personality. The depressive reactions, also, somewhat like the schizophrenic, did not as a rule show in the background distinct psychopathic personality. The 'mixed' reactions afforded some striking cases of coincidence of profound psychopathic formulations and high degree of psychotic disorder. Among twenty-six cases in which there was addiction to alcohol or other drugs there was found very little manifest evidence of psychopathic personality. A group of unclassified and miscellaneous cases contained some interesting individuals, but no significant generalizations emerged from them.

C. S. R.

[254] **The histopathology of the central nervous system in pellagrous psychosis** (Ueber die Histopathologie des Zentralnervensystems bei der Psychosis pellagrosa).—A. PENTSCHEW. *Zeits. f. d. g. Neurol. u. Psychiat.*, 1928, cxviii, 17.

THIS communication is based on the study of seven cases of pellagra, all of which clinically showed psychotic disorder. According to the author such psychosis is characterised by its progressive nature and may actually develop while other, somatic, manifestations of the disease are not in evidence or are improving; indeed, he goes so far as to say that the psychosis of the pellagrin develops in cases that are hygienically satisfactory and that do not seem to be much under the influence of the alleged etiological factors of the disease.

It is curious that in only four of the seven were spinal cord changes noticed; in the others they were minimal or absent. Accordingly it is concluded that pellagra is no disease of the spinal cord, but a brain disease; and the statement is made in so many words that "the concomitant involvement of the cord, not infrequent, yet sometimes awanting, has nothing to do with the still unknown cause of pellagra"!

In the brain the changes are seen mainly in the Betz- and other ganglion-cells, and consist of swollen cytoplasm with disappearance of Nissl substance; increase of fat and pigment in the cells; distention and hyaline change of capillaries and precapillaries in the outer layers of the cortex; there are no signs of inflammation. It is said that similar changes are also found in ergotism and in poisoning by coal gas and by lead; and it is argued that the psychoses of these states are of vascular origin and may be usefully described as "angiogenic psychoses."

S. A. K. W.

[255] **A consideration of the acute psychoses as reaction types.**—CHARLES R. BALL. *Amer. Jour. Psychiat.*, 1929, viii, 479.

THE author suggests that the acute psychoses are reaction types, the reactions occurring on the constitutional basis of the susceptibility of certain brain mechanisms to systemic toxic conditions. These systemic toxic conditions

originate in a disturbance of function in an abnormally sensitive central autonomic mechanism. Personality is to be regarded only as influencing the type of psychosis. The rôle inheritance plays in mental and nervous affections should not be judged entirely from nervous manifestations, but allergic reactions in general should receive more consideration because of their probable nervous origin. The exciting cause may be either psychic, physical, or a combination of both these factors.

C. S. R.

[256] **The blood sugar reaction to insulin in psychoses.**—K. E. Appel and C. B. Farr. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 145.

The purposes of this study were: (1) to discover the effect of insulin on the blood-sugar of psychotic patients as a preliminary to other insulin studies; (2) to find the type of reaction to insulin in the affective and schizophrenic psychoses; (3) to determine whether there is any difference in the reaction between patients with affective and schizophrenic psychoses; (4) to make a comparison of the reaction in psychotic patients with that obtained in normal patients.

In general, it was found that patients suffering from malnutrition benefited by insulin therapy. The appetite and amount of food intake were increased in practically all cases, and the dry, gray, flabby skin took on a healthy appearance. The effect on the mental status was difficult to appraise but there seemed to be an improvement in a few patients.

R. M. S.

PSYCHOPATHOLOGY.

[257] **The relation of the spirochaeta pallida to the pathological changes of dementia paralytica.**—J. F. Smyth. *Jour. Ment. Sci.*, 1928, lxxiv, 687.

A general survey of results leads to the conclusion that there are two distinct pathological processes at work in general paralysis: (1) A local irritative and destructive change, confined mainly to the cortical regions supplied by the anterior and middle cerebral arteries. This change is associated with the presence of spirochætes in those regions, and is characterized by a distinct specific neuroglial reaction in the deeper cortical layers. (2) A general vascular proliferative change accompanied by destruction and degeneration of neurones. This is believed to be mainly the reaction of the brain to the prolonged effects of syphilis, and to be analogous to the marked vascular changes which occur in other body tissues in systemic syphilis and in general paralysis. It does not appear to depend on the actual presence of the spirochæte in the cortex.

The relative intensity and persistence of each process account for the variation in the clinical signs and the morbid changes in the different types of

case. A preponderance of vascular change with few spirochætes is to be inferred in cases of the confused or demented type, while the presence of the spirochæte in large numbers in the cortex is characteristic of the more active grandiose or emotional type. From the therapeutic point of view, it is interesting to record that in the treatment of general paralysis by malarial inoculation and tryparsamide, the best results, so far, have been obtained in grandiose cases and in those with agitated melancholia. In cases of the confused or demented type, little or no improvement has followed.

C. S. R.

[258] **Syphilitic pseudobulbar dementia** (Démence pseudobulbaire syphilitique). —J. Dereux. *Jour. de Neurol. et de Psychiat.*, 1928, xxviii, 811.

Foix and Chavany isolated in 1926 a variety of syphilitic mesencephalitis with mental change, existing in two main varieties, according as hemiplegia coexisted or not. The present example, occurring in a man of 39, consisted clinically in :

(1) Pseudobulbar signs : emotional incontinence, typical speech disorder, and difficulty in swallowing.

(2) Left-sided hemiparesis.

(3) Psychical changes : puerilism, aboulia, disturbances of affectivity and of judgment.

Although the blood-pressure measured 170/110 and the blood and spinal fluid reactions were negative, the author regards syphilis as the etiological factor. In support of this view he points to the previous history of ocular palsies and the presence of pupillary alterations.

M. C.

[259] **Delinquency.**—W. A. Potts. *Proc. Roy. Soc. Med.*, 1928, xxii, 335.

We can get at the roots only by studying the delinquent in his environment. Briefly, the cause is failure to adjust to social life as he finds it, either from mental or physical inadequacy, or both. It may be said that often it can be traced to natural instincts and emotions, which the culprit neither understands nor knows how to control, coupled with ignorance on his own part or on that of those responsible for directing his life. Attention is drawn to the importance of slight and often unrecognized attacks of encephalitis lethargica, one of the outstanding results of which is permanent or occasional diminution of responsibility. This explains more bad conduct and suicides than is generally realized. Good home relationships are essential for good conduct in the young. But unless they are hopelessly unsatisfactory or there is bad example and training, home is the proper place for the young delinquent. The requisites for the healthy development of a child are : love and the sense of security that love brings ; an opportunity for developing his own individuality ; and he must have good examples in front of him. All ordinary instincts must be guided into satisfactory channels. The problem with delinquents at a late sage its

often to find out what earlier training has been faulty or neglected and to see that something is done to compensate for this. Our aim should be prevention of serious misdemeanour. This can be achieved by social betterment, including better housing and more public parks and open spaces. The School Medical Service should be developed so that it can deal with both physical and psychological difficulties. Finally, magistrates should never dismiss the first offender who has often been going wrong for years and is probably living in an unsatisfactory environment, for which reason he requires much help.

C. S. R.

[260] **The sex of mentally deficient individuals.**—Olga Bridgman. *Mental Hygiene*, 1929, xiii, 62.

It is possible, though not probable, that within the group of feebleminded there are more males at the lowest level, more females in the somewhat higher grades, and finally more males in the highest grades. This theory would require a complex idea of the distribution of intelligence and one at variance with ideas now current. It is assumed, at present, that the distribution of intelligence represents a normal curve, with its highest point agreeing with average ability and then a gradual decline in both directions, with superior intelligence at the upper end and inferior ability at the lower. This is, however, an assumption that needs further verification. It is possible that the Binet scale may fail to show true sex differences in children of normal intelligence, but that where mental defect is present, there may be a tendency for slight differences in ability in the two sexes to be exaggerated. It is probable that so large a social element, which can in no way be represented by mental age or I.Q. scores, enters into the appearance of feeblemindedness that tests like those of the Binet scale are not as successful in giving an exact definition of feeblemindedness as we might hope. It is true that certain individuals who have all the characteristics of feeblemindedness as described in general terms of ability and conduct still occasionally make fairly high scores on the Binet scale; whereas, on the other hand, certain persons who have a surprisingly low mental age still succeed in the community under average social conditions. The Binet tests are valued aids in the diagnosis of mental deficiency but they should be accompanied by others in determining both the existence of mental defect and the grade of defect present.

C. S. R.

[261] **Reading disabilities in relation to maladjustment.**—Phyllis Blanchard. *Mental Hygiene*, 1928, xii, 772.

Despite the existence of a considerable literature on the subject of reading disabilities, these often remain unrecognized by teachers and parents, being confused with mental retardation or deficiency. When this disability persists

over a period of years, it leads to failures in school and thus sets up a feeling of inferiority. Unless adequate and socially acceptable compensations for the feeling of inferiority are developed, personality and behaviour deviations are apt to arise. These deviations are usually rather mild, taking the form of day-dreaming, an oversensitiveness which may lead to unpleasant relationships with schoolmates, or inattention, absentmindedness, and lack of interest, all of which are annoying in the classroom. Even if adequate compensations for inferiority are found, the educational maladjustment still persists, and this may lead to vocational maladjustments in later life. This is particularly true when the child with a reading disability happens to be of superior intelligence. Some of the common causes of this disability seem to be undiscovered vision defects; emotional conditionings in the early years of school life; inadequate teaching in the early grades, or changes from one pedagogical method to another during the acquisition of the fundamental skill which is necessary for reading proficiency. The correction of reading disability ordinarily results in better educational adjustment. With the substitution of success for failure in the environmental situation, the feeling of inferiority is relieved, and compensatory mechanisms are no longer needed. Behaviour deviations, therefore, disappear.

C. S. R.

[262] **A review of blood-pressures in the insane.**—K. C. L. Paddle. *Jour. Ment. Sci.*, 1928, lxxiv, 733.

The average blood-pressure in the insane varies according to age—the older the patient the higher the blood-pressure. There is little or no difference between the blood-pressures in mania and melancholia. The large majority of insane epileptics exhibit a constant lowered blood-pressure, which is independent of the number or frequency of the fits or of the form of epilepsy. Epileptics in common with normal persons may have their blood-pressures raised by such conditions as arteriosclerosis and chronic Bright's disease. Non-epileptic defectives conform in general to the average of all types, but have comparatively low pressures after the age of fifty. It is clear, therefore, that mental symptoms in the insane bear no relationship to blood-pressure, the cases with epilepsy being excluded. In the latter it is probable that the lowered pressure is related to the epilepsy and not to the mental symptoms presented. C. S. R.

[263] **Variation in agglutinin formation in mental hospital patients and its probable relation to focal sepsis.**—F. A. Pickworth. *Jour. Ment. Sci.*, 1928, lxxiv, 709.

The interrelation between focal sepsis and the variation in agglutinin-formation of the insane may occur through the medium of a high intestinal sepsis caused or induced by infection with paratyphoid or food-poisoning organisms. Poisoning and loss of leucocytes in the intestinal tract, a bacteriæmia of intestinal organisms, most of which are rapidly killed, and re-infection from pyæmic focal sepsis originally caused or initiated by the bacteriæmia, are probable factors in this relation. C. S. R.

PROGNOSIS AND TREATMENT.

[264] **The subsequent histories of children born during maternal mental or nervous disease** (Die weiteren Lebenschicksale von Kindern, welche während des Bestehens einer mütterlichen Geistes- oder Nervenkrankheit geboren worden sind).—A. PILCZ. *Jahrb. f. Psychiat. u. Neurol.*, 1928, xlvi, 153.

A STUDY of this kind does not lend itself to abstracting, but it is highly useful and serves to correct or substantiate conclusions reached on more general grounds. From the valuable tables furnished by the author a few selections may be made.

Thirty-four children were born of 32 general paralytic mothers, and their record is as follows: four (under 20 years) living and healthy; two imbecile; one migrainous; 18 dead under one year and four dead over one year.

Forty-one children from 41 cases of maternal amentia: one living and healthy over 20 years; eight healthy, under 20; two imbecile; one psychopathic; one psychotic; 11 dead under one year and one dead over one year.

Thirty-three children from 30 mothers with manic-depressive psychosis; five living and healthy, under 20; four imbecile; four criminal; two psychotic; seven dead under one year and one dead over one year.

Sixty-one children of 56 schizophrenic mothers: two healthy, over 20; 12 healthy, under 20; six imbecile; one psychopathic; 21 dead under one year and five dead over one year.

Two hundred and ninety children from 229 imbecile or idiot mothers; 21 healthy over 20; 20 healthy under 20; 28 imbecile; five criminal; one psychopathic; 135 dead under one year and 21 over one year.

One hundred and sixty-one children of 144 epileptic mothers: 16 over 20 and 13 under 20, healthy; five imbecile; three criminal; four psychopathic; two psychotic; three epileptic; 78 dead under one year, and eight over one year.

This last record is of deep interest and clearly negatives importance being attached to heredity in epileptic cases. There are numerous other statistics of equal interest to which the student should refer. J. S. P.

[265] **Expectation of mental disease.**—HORATIO M. POLLOCK and BENJAMIN MALZBERG. *Mental Hygiene*, 1929, xiii, 132.

THE data of this study emphasize the seriousness of the problem of mental disease. It appears that approximately 4·5 per cent. of persons born in the State of New York may, under existing conditions, be expected to succumb to mental disease of one form or another, and become patients in hospitals for mental disease. In other words, on the average, approximately one person out of 22 becomes a patient in a hospital for mental disease during the life-time of a generation. In the several groups shown in tables, the ratios of those becoming patients to the whole population group are: All males, 1 to 21·3; all females, 1 to 22·7; native males, 1 to 23·3; native females, 1 to 25; foreign-born males, 1 to 18·5; foreign-born females, 1 to 19·2. Under present conditions

mental disease occurs among the general population with striking regularity, and it seems probable that the rate of incidence will not greatly change until the principles of mental hygiene are better known and more widely adopted.

C. S. R.

[266] **The pathology of paresis after treatment with malaria.**—A. Ferraro. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 69.

The material in this paper was obtained from 29 patients who died at various intervals after inoculation with malaria, and apart from the omission to search for spirochætes, Ferraro deals with the histological changes in a most exhaustive manner. The numerous data may be summarised as follows :—

1. Treatment with malaria influences favourably the pathological process of general paralysis.

2. The beneficial influence of malaria is chiefly exhibited in its effect on the inflammatory reactions. Lessening of the inflammatory reaction seems a definite and constant observation but appears to be independent of the clinical outcome of the treatment.

3. This change in the inflammatory reaction consists in a diminution of the exudate and in a reduction of the new blood vessels. While the reduction of the exudate is of rapid occurrence, the reduction in the number of the blood vessels is a more gradual and slower process.

4. The influence on the parenchymatous changes is less definite. The loss of nerve cells is, of course, uninfluenced by the treatment, but the influence on the neuroglial and microglial reactions is more definite. While, in clinically unfavourable cases, the neuroglial and microglial reactions may appear uninfluenced, in the favourable cases the beneficial effect of the treatment is evident on both interstitial and mesodermic reactions.

5. No parallelism seems to exist between the resorption of the inflammatory exudate and the clinical course, but a rough parallelism exists between the clinically favourable cases and the subsidence of some of the ectodermal reactions (microglia and neuroglia).

6. There is no secure way of establishing a comparison between the intensity of the process in general, prior to the malaria, and the effect which the treatment has on it. It seems, however, the less pronounced the parenchymatous changes the higher are the chances of clinical improvement.

7. No qualitative change in the pathological formula of the exudate follows the treatment of paresis with malaria. The number of plasma cells remains in proportion to the number of lymphocytes.

8. Neither gummas nor granulomas of the tertiary syphilitic type are generally encountered in patients treated with malaria ; transformation of the paretic process into that of cerebral syphilis cannot be substantiated either from the study of the exudate or from the presence of specific reactive tissue.

9. No appreciable aggravation of the paretic process in the early stages of the treatment, as claimed by other investigators, has been observed.

10. In the acute stage of malaria a swelling of the endothelium of the small blood vessels is observable as the only pathological sign attributable to malaria itself, but no granulomas or specific glial nodules were found.

R. M. S.

[267] **Experiences with the malaria therapy of Wagner v. Jauregg** (Ueber Erfahrungen mit der Malariatherapie Wagner v. Jaureggs).—Julius Schuster. *Jahrb. f. Psychiat. u. Neurol.*, 1928, xlvi, 31.

The author's statistics embrace 319 cases (201 general paralysis, 60 tabes, 58 taboparesis); six cases were fatal, two probably not in any way connected with the malaria method. A table is published giving the details for each of the years 1920 to 1926 inclusive. The method used is the malarial technique followed in every case by a neosalvarsan series. A "full remission" is claimed for 47 of the 201 paralytics, for 56 of the 60 tabetics, and for 33 of the 58 taboparetics. Forty-seven of the first class were "unchanged." J. S. P.

[268] **Recent methods in the treatment of general paralysis.**—Henry A. Bunker, Jr. *Amer. Jour. Psychiat.*, 1929, viii, 681.

Of 542 tryparsamide-treated cases of general paralysis, full remission of mental symptoms and restoration of the patient to approximately his former status occurred in about 35 per cent. Speaking generally, some 30 injections produce the maximum of clinical improvement of which the drug is capable in the given case, but upwards of 100 injections are often necessary to modify materially the strength of the Wasserman reaction in the spinal fluid. Of 2,460 malaria-treated cases, a full remission occurred in about 27 per cent., with the production of an incomplete remission in an additional 26 per cent. Malaria, unaided by supplementary specific treatment, is capable of a definite influence upon the spinal fluid pathology; but this influence, especially as regards the Wasserman reaction, is gradual in its manifestation. Women seem to respond less successfully to malaria treatment, on the whole, than do men; but it is possible that this difference between men and women patients is more apparent than real. The seeming arrest of the disease process effected by malaria may be of protracted duration. Such a status characterized three out of eight patients at the end of six and one-half to seven and one-half years, 13 out of 25 patients at the end of nearly five years, and 21 out of 29 patients at the end of four to five years. C. S. R.

[269] **Light therapy in mental hospitals.**—H. Dove Cormac. *Proc. Roy. Soc. Med.*, 1929, xxii, 455.

The position of actinotherapy in mental hospitals in this country is discussed. An investigation of the results of ultra-violet irradiation in mental disorders at Parkside Mental Hospital is described and it is shown that certain types of psychoses appear to benefit. The physiological action of actinic rays in relation to mental disorders is discussed and their mode of action on the nervous system suggested. Reference is made to substances which sensitize the body tissues to sunlight and ultra-violet radiation. An allusion is made to glass, penetrable by a portion of the actinic rays, and its uses. The need for ultra-violet ray apparatus in every mental hospital is urged both for treatment of mental and physical conditions and for the study of its action. C. S. R.

Reviews and Notices of Books.

Degeneration and Regeneration of the Nervous System. By S. RAMON Y CAJAL, M.D., F.R.S. Translated and edited by RAOUL M. MAY, Ph.D.(Harv.), D. ès Sc. (Paris). In two vols. London: Oxford University Press, Humphrey Milford. 1928. Pp. 769. Price 50s. net.

THIS is an English translation, brought up to date by the author, of the Spanish edition of 1913-14, which was written at the request of the physicians of the Argentine Republic to commemorate Cajal's reception of the Nobel Prize. It deals almost exclusively with the results of experimental injury to the nervous system, both central and peripheral. In the examination of his specimens the author has used for the most part his reduced silver impregnation method in one or other of its many modifications, hence the changes described are chiefly in nerve fibre and neurofibrils; but some account is also given, although not in so great detail, of the accompanying reactionary processes in neuroglial and connective tissues. Every part of the central and peripheral nervous systems has been examined, with the exception of the internal ear and the sympathetic plexuses of the blood vessels and hollow viscera. The result is a book full of the most precise information as to the minute structure of the nervous system and its reaction to injury. In some ways there is almost too much detail, for the reader becomes lost in its mazes and finds difficulty in obtaining any general conception of the main processes at work. This difficulty is not made any less by the very literal translation, which contains a number of words not in everyday use, although they may be in the dictionary. This is, however, fully compensated by the numerous beautiful drawings with which the author makes his meaning clear.

The subject is one which Cajal has made peculiarly his own. His work on the peripheral nerves was well known in England before the war, but that on the spinal cord, the brain and the spinal and sympathetic ganglia was unfamiliar. Much that we learnt about the repair of lesions in the brain and cord as a result of war wounds we find in this pre-war book, where it is enriched with a detail and completeness impossible in any study of human material. The time factor, to which the author has given much attention, cannot of course be assumed to be the same in human pathology as in experimental work on small animals, but the relationships in time of one reaction to another are probably similar if not identical.

To neurologists the chief interest of the book will no doubt centre on the repair of those structures which are capable of functional recovery, and to the

effects of contusions of the brain and spinal cord ; and the less practical researches on the repair of wounds of the brain and spinal cord may have for him only a scientific interest. Yet who can say that the exact knowledge which this book gives of the reactions of the cerebral cortex to injury may not be applied to the solution of some of the problems of neuropathology and even of psychopathology which continually tease us ? Altogether the book is of the greatest value both as a record of scientific work, and as a basis for future studies. J. G. G.

Epilepsy. By WILLIAM G. LENNOX, Research Fellow in Neuropathology, Harvard Medical School, and STANLEY COBB, Bullard Professor of Neuropathology, Harvard Medical School. Medicine Monographs, Vol. XIV. London : Baillière Tindall & Cox. 1928. Pp. 197. Price 16s. net.

OF the renewed interest taken in the problems of epilepsy in these days this compilation affords ample proof. The viewpoint of the authors is mainly that of physiology, and to some extent also that of treatment. It is satisfying to the neurologist to find them getting to grips with the technical features of the convulsive attack and with the physiological phenomena underlying it ; mere description may be of service to the beginner in medicine, but pathogenic difficulties are always prominent in the background. The irritation, the release, the short circuit and the explosive theories are in turn examined and the conclusion drawn is, as may be surmised, eclectic ; none of them is by itself satisfactory ; probably all seizures are combinations of two or more of the four mechanisms. It is satisfactory, too, to note the authors' recognition of the disproportion between convulsion and 'lesion,' and that a disorder of function, a mode of reaction, constitutes a problem in physiology and not in pathological anatomy. The factor of 'functional abnormality' can be conceived of as embodying an unknown 'reactive capacity,' and also one that is related to physicochemical changes on the one hand and to the emotional or affective life on the other.

The greater part of the book deals with the former of these last two, viz., the effects of physicochemical changes in nerve-cells, and with the influence thereon of extrinsic factors such as the condition of the circulatory system, alimentary system, endocrine glands, blood, urine, and so forth ; acid-base relationships and the metabolism of protein, carbohydrate and fat are similarly investigated from the standpoint of their effect on neural tissue. All this is examined technically and lucidly, even if the general impression left on the reader is one of diversity and incompleteness of knowledge ; yet we find a summary of the authors' conviction in a sentence which parallels and paraphrases one of Hippocrates' dicta : "whoever is acquainted with physiology and can render a man acidotic, dehydrated and fully oxygenated could also repress this disease, without minding purification of narcissistic personalities, ritualistic empirical diets and all other illiberal practices of a like kind." A

useful and practical purpose has been served by this presentment of current knowledge, gleaned from a wide literature and rendered the more valuable by the authors' criticisms and personal conclusions. S. A. K. W.

De l'Angoisse à l'Extase ; Études sur les Croyances et les Sentiments. By Dr. PIERRE JANET, Professor of Psychology at the Collège de France. Paris : Felix Alcan. 1928. Pp. 697. Price 80 fr.

ALL those who are admirers of the clinical and analytical genius of Professor Janet will enjoy his latest volume, which in its format is identical with his classical *Névroses et Idées Fixes* of a quarter of a century ago. Taking as his basis the mysticism and ecstasy of the patient known as Madeleine (whose case is described at length in a preceding volume of which we have received no copy for review), the veteran psychologist enters on a long and minute examination of the influence of a profound sense of joy ("ce bonheur perpétuel et quelquefois sublime") in modifying thought and intellectual processes. By natural stages the reader is taken to a discussion of the sentiments and to an examination of those common clinical cases in which alternations of affect predominate, to manic-depressive psychosis and other forms. The four elementary sentiments of effort, fatigue, sadness and happiness are subjected to a similar minute investigation. A third section is devoted to the interrelation and organisation of emotions, beatitudes, and sentiments.

It is perhaps a little remarkable that comparatively slight attention is directed to the religious sentiment, especially since the clinical material of mysticism and ecstasy exhibits frequently a definite religious aspect, but Professor Janet takes the line that religion influences only external forms ; in the case of Madeleine the religious setting is at once apparent, yet similar psychopathological phenomena occur independently of any religious background. The beatitudes of morphia-taking are analogous clinical data but have nothing to do with that particular sentiment. "No confessor, no convent directrix, is responsible for diseased conditions which can appear in exactly the same guise in individuals who profess no religion at all."

As with all of Professor Janet's work, it is lucidly and charmingly written, and is well documented. Of references to Freud's psychological work there are comparatively few ; the author justly criticises the limitations and systematisations of the latter's view of *angoisse* and by a few well-chosen clinical instances underlines its essential incompleteness. A good index adds to the usefulness of the volume. S. A. K. W.

Instinct and Personality. By A. CAMPBELL GARNETT. London : Geo. Allen & Unwin. 1928. Pp. 218. Price 8s. 6d. net.

DR. CAMPBELL GARNETT'S book adapts and modifies McDougall's views on instinct, but is disappointingly reticent and vague, as all academic studies of the subject tend to be, on 'personality.' The author takes a monistic view of mind-body relationship, and robs the instincts of any

energy of their own, finding the common source of energy in the 'life-urge' or 'horm.' On this view repression as a separate activity is an unnecessary hypothesis; the phenomena of the so-called unconscious are explicable on the basis of what is equivalent to a 'drainage-theory' of psychological inhibition. Processes of behaviour more or less instinctive work themselves out in so far as expectations of ends are created; these expectations upon which so much weight is placed as stimuli to activity (and which may apparently be also physiological, on the monistic hypothesis), are when conscious the psychical correlates of the 'life-urge.'

The book is clearly written and makes easy reading if the numerous assumptions are placidly accepted. It does some service in calling attention to difficulties in the present position of the theory of the unconscious and of repression. Although utilising data from abnormal psychology it shows no acquaintance with recent contributions from the latter to the problems under Dr. Garnett's consideration. Like all works of its kind, the book suffers by comparison with work derived from first-hand observation of human material, normal and abnormal; and it displays abundantly the academic habits of taking data from conscious experience at their face value, and of easy-going translations of theoretically-derived concepts into psychological entities with a real existence and sometimes a quantitative expression. R. D. G.

Recent Advances in Neurology. By W. Russell Brain, D.M. (Oxon.), M.R.C.P. (Lond.), and E. B. Strauss, B.M. (Oxon.), M.R.C.P. (Lond.). With 38 illustrations. London: J. & A. Churchill. 1929. Pp. 412. Price 12s. 6d.

A new volume in the 'Recent Advances' series published by Messrs. Churchill deals with neurology in a pleasantly informative fashion, embodying a wide survey of recent additions to neurological doctrine, whose subjects range from the cerebrospinal fluid to sleep. "Une étude scientifique n'est jamais terminée," as Janet once said: the task of maintaining up-to-dateness, never easy, is more than a little difficult in the case of the nervous system, for it continues to evoke more research than many other divisions of the medical field. We think the authors have acquitted themselves remarkably well, and produced an eminently practical and serviceable multum in parvo that is sure of appreciation. Nor does it form a mere precis of the work of others; opinions and conclusions are not slavishly set down, but subjected to criticism and modification in the light of the authors' own experiences and studies.

Die Psychosen der Schwachsinnigen. By Dr. Rudolf Neustadt. Dozent in Neurology and Psychiatry, Medical Academy of Düsseldorf, Berlin: S. Karger. 1928. Pp. 188. Price Mk. 15.60.

Taking the conception of feeblemindedness as being constituted by stationary mental defect, and excluding combinations with organic nervous affections and with epilepsy, the author of this monograph bases his conclusions on the study

of some 209 cases of the condition. Among these he has noted various developments of a psychotic character. Manic states, rarely endogenous, seem mainly to arise as the result of the action of some exogenous noxa; altogether, these are distinctly rare. Depressive states, on the other hand, are more definitely endogenous, but their numbers approximate to those of the first-named. Alterations of mood, a rather mixed group, scarcely call for separate mention, as they are typical of feeblemindedness. Marked psycholability is common enough; anxiety states also occur with some frequency, usually assuming a paranoid garb. A sub-group is constituted by an anxiety-hallucinatory type. As a general rule, psychoses of this latter kind are prone to develop between the years of 18 and 23; they are in most instances amenable to treatment.

States of mental confusion of all grades, 'twilight states,' stupors, and so forth, may make their appearance after the age of 40, and in some 60 per cent. of cases exhibit a periodicity. Catatonic and hyperkinetic syndromes are distinctly rare, but hallucinoses are common. Definite schizophrenia forms a fractional percentage, whereas borderland types which present relationships of a semiological kind to one or other of all the above-mentioned psychoses form the majority of the total number. As a general conclusion, the author stresses the point that these episodic psychoses of the feebleminded form a special variety of the exogenous class.

The author has made a practical clinical contribution to a somewhat confused subject, which may aid in further research on the psychoses as a whole.

Le Diagnostic dans les Affections de la Colonne Vertébrale chez l'Adulte. By P. OUDARD, A. HENSARD, and H. COUREAUD, Surgical Clinic of the Hôpital Maritime Sainte-Anne, Toulon. With a preface by Professor J. A. SICARD, Paris. Paris: Masson et Cie. 1928. Pp. 256. Price 36 fr.

THERE is much of neurological interest in this well-illustrated monograph devoted to the diagnosis of affections of the spine. It is based on the experience of three French naval surgeons, who have found quite a proportion of their naval hospital cases to belong to this class. At an early stage of spinal pains diagnosis is often difficult; and to distinguish between the benign and the serious requires patient investigation by the most modern methods.

A scheme of clinical examination is in our opinion well-planned and remarkably comprehensive, and it is followed by a semiological description, first of a topographical and then of a general kind; in a final section specific spinal affections are examined. The range is of considerable width, seeing that it extends from congenital anomalies such as spina bifida occulta to disorders of psychical origin such as camptocormia, and includes the somewhat amorphous group of infective varieties of spondylitis. For diagnostic purposes reliance is placed on lumbar puncture, radiography, and lipiodol just as much as on direct examination. The difficulties associated with 'pain in the back' are faced squarely and lucidly. Excellent diagrams are reproduced, that of the spinal column as seen from the front, with its relation to neighbouring structures, being especially useful.

Zwang und Zweifel. By Dr. Wilhelm Stekel, Vienna. Part II. Berlin and Vienna: Urban & Schwarzenberg. 1928. Pp. 673. Price Mk. 32; bound, Mk. 35.

The first part of this, the latest of Dr. Stekel's large contributions to psychopathology and, according to his preface, the "end of his life's work," was reviewed in these columns (see this Journal, vol. viii, p. 285); the second portion embodies long accounts of actual psychoanalytic investigation of individual cases—the most complete he has published. As before, the clinical material is diverse and in some respects uncommon. That entitled "Die Haarsprache" presents features of no little interest, even if the obsession itself follows ordinary lines. Descriptions are given also of schizophrenic and paranoid cases treated by psychoanalytical methods. A last word closes the sequence of these elaborate volumes, one of generous appreciation of the genius of Freud, with whom, as everyone knows, the author has not seen eye to eye; "Ich werde nie vergessen, dass er die Fackel entzündet hat, die die Wege meiner Forschungen beleuchtet."

A Study of Intracranial Surgery. By Hugh Cairns. Medical Research Council Special Report Series, No. 125. London: H.M. Stationery Office. 1929. Pp. 83. Price 3s. net.

Mr. Hugh Cairns, holder of a Rockefellar scholarship, has spent one year as an assistant resident surgeon in Dr. Harvey Cushing's clinic at the Peter Bent Brigham Hospital in Boston, Mass., and has in this report collected and surveyed the material to which he had access during that time. He deals with the diagnosis and treatment mainly of intracranial tumours according to the technique employed by Dr. Cushing, and gives a readable and informative account of methods and results. These are already known in greater or less degree to many who have either seen the clinic themselves or perused the various contributions which have emanated from it, but it is useful to possess a summary of a typical year's work in the form of a report by one who is not an American and who gives personal impressions of a not uninteresting kind. A number of clinical and pathological illustrations are included.

We note that Mr. Cairns combats the idea that a patient who is suffering from a cerebral tumour will never be 'quite right' again, and cites a case to the contrary, but of only six months' duration! He says specifically that "it is rather remarkable that such perfect recovery should follow removal of a tumour of the brain," but admits that this case "has not been observed for a sufficient length of time." He then cites another, operated on in 1910, in which 17 years of normal activity followed. Some of those in England who in other days were associated with the late Sir Victor Horsley know that this record is easily exceeded by several of his.

Anatomy and the Problem of Behaviour. By G. E. COGHILL. Cambridge University Press. 1929. Pp. 113. Price 7s. 6d. net.

THE writer of this series of lectures is concerned to show how patterns of behaviour antedate the appearance of an anatomical nervous system, and outlines an ingenious hypothesis to the effect that a gradient of electric potential, acting along the external limiting membrane (say in *Amblystoma*) is the essential factor in determining the path along which the nascent nerve-cell will grow. Preneural integrating forces originate before neural functions; longitudinal "metabolic gradients" (this term is used in the sense imagined by Professor Child) are the precursors of anatomical neural tracts. Much significance is attached to the Rohon-Beard cell, a cell which has its body within the spinal cord, an ascending and a descending process in the cord, and another branch passing out as a sensory fibre. The latter divides into two filaments, one of which goes to muscle and the other to skin. Thus the cell is at once exteroceptive and proprioceptive; it fuses two modes of excitation into one mode of nerve impulse. In this sense it appears to be the prototype of the associational mechanism in the nervous system of vertebrates. In a definite sense, too, the pyramidal cell of the cerebral cortex, or the Purkinje cell of the cerebellar, can be regarded as a Rohon-Beard cell even if removed from the receptor field. Once function starts all these cells grow extensively. Topographical position in the brain is of less significance for groups of ganglion cells than the period in time when they commence participation in the conditioning of behaviour.

We commend these thoughtful pages to the attention of the philosophically-minded.

The Cytoarchitectonics of the Human Cerebral Cortex. By CONSTANTIN VON ECONOMO, Professor of Neurology and Psychiatry, University of Vienna. Translated by Dr. S. PARKER. London: Humphrey Milford, Oxford University Press. 1929. Pp. 186. Price 21s. net.

PROFESSOR VON ECONOMO'S smaller volume on the cerebral cortex, a French edition of which has already been reviewed (see this JOURNAL, October 1928, p. 190) now appears in an English edition, well printed and illustrated and of convenient format. It is sure of wide appreciation among English readers, representing as it does the present highwater mark of advance in knowledge of the human cerebral cortex, and suggestive, too, of knowledge still to be acquired. Without studies of this kind descriptions of pathological changes in the cortex are deprived of their significance; the meaning of such alterations can be understood only by reference to comprehensive acquaintance with normal cerebral structure. Correlation of the latter with cerebral function is in its infancy, so to speak; and the distinguished author of this work indicates in his final chapter the lines along which further researches are likely to prove profitable.

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